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DISEASES CAUSED BY BACTERIA AND FUNGI

CASMAN, E. P. (1958). **Serologic studies of staphylococcal enterotoxin.** — *Publ. Hlth Rep., Wash.* **73,** 599-609. [Author's summary modified.] **1**

A completely dialysable medium for the production of staphylococcal enterotoxin was developed. The antigenicity of staphylococcal enterotoxin was demonstrated; cats were protected against heterologous and homologous enterotoxins. Of 29 strains of staphylococcus examined for enterotoxigenicity by the intravenous cat tests, 21 enterotoxigenic and 2 non-enterotoxigenic strains were found to be serologically related and set apart from the remaining 6 non-enterotoxigenic strains when examined by the agar diffusion test of Ouchterlony.

MCAULIFF, J. L., PHILLIPS, W. V. & STEELE, J. R. (1958). **Polyvinylpyrrolidone (HPX-A new treatment for bovine mastitis.**—*J. Amer. vet. med. Ass.* **133,** 169-171. [Authors' summary modified.] **2**

Polyvinylpyrrolidone was not toxic when infused into the bovine udder, even in large doses. In cows in two herds, 63 quarters infected with *Streptococcus agalactiae* were infused with penicillin and dihydrostreptomycin; recovery, based on bacteriological evidence, occurred in 42 quarters. In cows in two other herds, 65 infected quarters were infused with a similar dose of penicillin and dihydrostreptomycin, plus 1 g. of polyvinylpyrrolidone, with recovery in 61 quarters. Polyvinylpyrrolidone seems to have an anti-inflammatory action within the bovine udder. The reduction in swelling and inflammation apparently allows a more rapid and thorough penetration of antibiotics. (This product has also been reported to reduce the irritating effect of neomycin, so that large doses may be infused into a quarter, without untoward results.)

CAMERON, J. (1958). **Enhancement of mouse-virulence of group A streptococci by bactericidal resorcinols.**—*Nature, Lond.* **181,** 919. **3**

The action of the 4 *n* substituted alkyl-derivatives, ethyl, propyl, butyl, amyl and hexyl resorcinol, was studied. In one experiment 18-hour-old cultures of streptococci were diluted 1/10 in 0·1% solns. of the various resorcinols and kept at room temperature for 30 min., with occasional shaking; a 1/10 saline dilution of culture was used as control. Mice were then injected i/p with 0·5 ml. of the suspensions. All control animals and all those injected with the ethyl and propyl resorcinol suspensions died; those injected with butyl, amyl and hexyl resorcinol suspensions survived. In a second experiment mice were injected i/p with 0·5 ml. of 10^{-2}–10^{-6} saline dilutions of culture followed immediately by 0·5 ml. of a 0·1% saline soln. of the resorcinols; controls were given 0·5 ml. of the saline dilutions of culture and 0·5 ml. of saline soln. Virulence-enhancement was manifested by a hundred- to a thousandfold decrease of the LD_{100}.—T.E.G.R.

BUTTIAUX, R. (1958). Les streptocoques fécaux des intestins humains et animaux. [**Faecal streptococci in man, cow, sheep and pig.**]—*Ann. Inst. Pasteur* **94,** 778-782. [English summary modified.] **4**

Faecal streptococci are always present in man and pigs, not always in cows and sheep. *Str. faecalis* and its variants are more frequent in man but do occur in animals. *Str. faecium* is always present in sheep; it is frequent in cows, pigs, and also in man.

These findings differ from those of Barnes & Ingram [*J. appl. Bact.* **19,** 204 (1956)] and Cooper & Ramadan [*V.B.* **26,** 335]. It must be admitted that a regional factor is involved in the distribution of Group D streptococci.

MOORE, R. W. & GRUMBLES, L. C. (1958). **Infectious hepatitis of chickens — a review.**—*Sthwest. Vet.* **11,** 281-284. [Authors' summary modified.] **5**

A review of existing literature on a newly recognized disease of chickens, infectious hepa-

titis. This disease is apparently not new but the causative agent has only recently been isolated. The causative agent is non-bacterial and is commonly referred to as a virus. Whether or not it is a true virus is not known. [But see next two absts.] Of how much economic importance this disease is or will become is unknown but it is evidently widespread in the U.S.A. and may be world wide in distribution.

I. Peckham, M. C. (1958). **Avian vibrionic hepatitis.**—*Avian Diseases* **2,** 348-358. **6**

II. Hofstad, M. S., McGehee, E. H. & Bennett, P. C. (1958). **Avian infectious hepatitis.** —*Ibid.* 358-364. [Authors' summaries modified.] **7**

I. A vibrio has been repeatedly isolated from liver and bile of adult fowls from flocks with histories and gross lesions of hepatitis. Inoculation of this vibrio into chicks produced hydropericardium, pallor of the myocardium, enlarged spleen and focal necrosis in the liver. The vibrio was re-isolated from the inoculated chicks by inoculation of the yolk sac of 5 to 7-day embryos with the liver, spleen, pericardial fluid and bile. Vibrios have been isolated from clinical cases by the inoculation of bile on blood agar which was then incubated under reduced oxygen tension. Vibrios similar to those isolated in the author's laboratory have been demonstrated in yolk material containing the hepatitis agent sent in from two other laboratories. In view of the evidence presented, it is proposed that the clinical, pathological syndrome caused by a vibrio be designated avian vibrionic hepatitis to distinguish it from other types of hepatitis.

II. In January 1956, cases of hepatitis were diagnosed in two flocks of fowls. In one flock there was some mortality while in the other only a few culls were observed to have hepatitis. An agent, lethal for 7-day-old chick embryos, was isolated. The disease could be reproduced in chickens by parenteral inoculation and the agent re-isolated from the livers of the inoculated chickens. A vibrio organism was isolated in artificial medium from infected embryos which, after many passages, produced a typical mortality pattern in inoculated chick embryos.

Weber, A. F., Hasa, O. & Sautter, J. H. (1958). **Some observations concerning the presence of spirilla in the fundic glands of dogs and cats.**—*Amer. J. vet. Res.* **19,** 677-680. [Authors' summary modified.] **8**

Spirilla (*Spirillum rappini,* or *canis*) were found in the fundic regions of the stomachs of 15 normal, adult dogs and 12 cats, but not in 3 kittens.

The spirilla were located principally in the lumina and the parietal cells of the fundic glands, showing an exclusive predilection for the latter. Most of the spirilla were in the intracellular canaliculi of the parietal cells, but at times also appeared within the cytoplasm. The organisms were also present beneath and within the mucus which overlies the surface epithelium.

The spirilla appeared to be pathogenic, rather than saprophytic. They caused slight changes only in parietal cells. The changes seemed to involve a progressive enlargement of the intracellular canaliculi, followed by degenerative changes in the nucleus and cytoplasm, but the rate of degeneration of the invaded parietal cells appeared to be low.

Hale, C. M. F. & Bisset, K. A. (1958). **The pattern of growth and flagellar development in motile Gram-positive cocci.**—*J. gen. Microbiol.* **18,** 688-691. [Authors' summary modified.] **9**

Using a staining technique which enables the flagella and cell walls to be demonstrated simultaneously, the distribution of flagella on the component cells of motile Gram-positive cocci was examined. Such multi-cellular cocci divide in the manner already suggested for rod-shaped bacteria not by simple fission but by a process analogous to budding, so that different cells in a group are at different physiological ages or stages of development.

Harris-Smith, P. W., Smith, H. & Keppie, J. (1958). **Production *in vitro* of the toxin of *Bacillus anthracis* previously recognized *in vivo*.** — *J. gen. Microbiol.* **19,** 91-103. [Authors' summary modified.] **10**

A lethal oedema-producing toxin identical with the toxin originally recognized *in vivo,* was made *in vitro* in serum cultures of *B. anthracis.* Toxin was produced by the attenuated immunogenic Sterne strain as well as by the virulent N.P. strain. Previous non-recognition of the toxin in cultures was due to its early appearance and rapid disappearance under ordinary growth conditions. A toxin-destroying mechanism was demonstrable in organisms from cultures grown for more than a few hours. Attempts to maintain the toxin concentration or to increase it by addition of various nutrilites to batch culture failed; only by continuous culture could the organisms be kept in their toxigenic growth phase. Traces of the toxin appeared in cultures in tryptic meat broth; these were increased by

the addition of large molecular constituents of serum which appear to play an important role in toxin production.

LUKE, D. (1958). **Tuberculosis in the horse, pig, sheep and goat.**—*Vet. Rec.* **70,** 529-536. [Author's summary modified.] **11**

The incidence, susceptibility, symptoms, P.M. findings, and diagnosis of TB. in the horse, pig, sheep, and goat are discussed and the relevant literature is reviewed briefly.

LAMBRECHTS, M. C. (1957). **Some observations on the Stormont test.** — *J. S. Afr. vet. med. Ass.* **28,** 169-174. **12**

The author evaluates and compares the single, double and the Stormont tuberculin tests with at the same time an assessment of interval values on one herd of 13 cows (3 cows by multiple injections). The single test was carried out some ten months previously; the results are not quite comparable to the immediate test. The practice of making at the same time multiple (9) injections is likely to open up a completely different set of reaction results and the results should therefore be regarded with some caution. The authors of the Stormont test stated that the test differentiated avian reaction from mammalian but not "skin TB.", which is the finding of the author as also that the 7 day boost was the most significant of the longer intervals.

—W. R. KERR.

KUCEL, J. (1958). Suzbijanje tuberkuloze goveda u FNRJ od 1946-1956 god. **[Control of bovine tuberculosis in cattle in Yugoslavia between 1946-1956.]** — *Veterinaria, Sarajevo* **6,** 536-548. [In Croat. Summary in English.] **13**

A tuberculin testing programme commenced in Yugoslavia in 1946. Reactors were slaughtered except pregnant and high-yielding cows in the first months of lactation, which were removed to special centres. In 1953 these centres were abolished and all reactors slaughtered. Cattle were tested once a year until 1953 when supplementary tests with mammalian and avian tuberculin were introduced. In 1952 Old Tuberculin was replaced by synthetic medium tuberculin and since 1956 locally produced P.P.D. has been in use. Incidence of TB. in cattle has now decreased to under 2%, from over 20% in some parts in 1946–47.—E.G.

TUNKL, B. (1958). O utjecajima na pouzdanost intrakutane tuberkulinske probe. **[Reliability of the tuberculin test in cattle.]**—*Vet. Glasn.* **12,** 439-442. [In Croat. Summary in English.] **14**

The reliability index of Old Tuberculin was 89·7% as compared with 94·8% of concentrated synthetic (Dorset) medium tuberculin. Young animals free from TB. were stated to react sometimes to O.T. because of its content of non-specific substances.—E.G.

LJEŠEVIĆ, Ž. (1957). **[Effect of parasitic allergy on the tuberculin test in cattle.]** — *Acta vet. Belgrade* **7,** 81-91. [In Serbian. Summary in German.] **15**

Of 395 tuberculin-tested cattle 28 yielded positive and 5 doubtful reactions. TB. was confirmed P.M. in 17 positive and 2 doubtful reactors. In 13 of the remaining 14 positive and doubtful reactors without lesions, there was parasitic infestation. Although of little significance in practice, it was concluded that fascioliasis, echinococcosis and warbles may influence the result of the tuberculin test, particularly when mammalian rather than avian tuberculin is used.—E.G.

FORŠEK, Z., TUNKL, B. & ROMIĆ, Ž. (1958). Testiranje bovinog tuberkulina na umjetno senzibiliziranim govedima. I. Senzibilizacija goveda umrtvljenim Mycobacterium tuberculosis. **[Testing of bovine tuberculin in sensitized cattle. I. Sensitization with killed tubercle bacilli.]**—*Veterinaria, Sarajevo* **6,** 558-568. [In Croat. Summary in English.] **16**

Evaluation of bovine tuberculin in cattle, sensitized with three s/c doses of killed, freeze-dried tubercle bacilli suspended in liquid paraffin, was regarded as more reliable than evaluation in infected cattle, since in such cattle there was less variation in the degree of allergy.

—E.G.

KOCJAN, L. (1958). Pojave paralergičnih reakcija kod komparativne metode tuberkulinizacije. **[Parallergic reactions in tuberculin testing of cattle.]**—*Vet. Glasn.* **12,** 359-363. [In Croat. Summary in English.] **17**

Of 1,744 cattle, 90 gave non-specific reactions to the tuberculin test; 55 of these were under 4 years of age, some in an advanced stage of pregnancy. Of 761 cattle 45 gave non-specific reactions. Of these 28 reacted positively when subjected to supplementary tests with avian and bovine tuberculin.—E.G.

JANKOV, M., STEFANOVIĆ, V. & ŽIVANOVIĆ, D. (1957). **[Effect of ultrasonic waves on Old Tuberculin.]** — *Acta vet. Belgrade* **7,** 55-60. [In Serbian. Summary in English.] **18**

Intradermal reaction in g.pigs and rabbits to Old Tuberculin, which had been exposed to

ultrasonic waves for 10–20 min., was less marked than to untreated Old Tuberculin.

—E.G.

KONST, H. & MCINTOSH, C. W. (1958). **Studies of Johne's disease in Canada. I. The use of johnin P.P.D. II. Results of early intradermal testing with johnin P.P.D.**—*Canad. J. comp. Med.* **22,** 157-160 & 203-214. **19**

RICE, C. E., KONST, H. & SMITH, A. N. (1958). **Studies of Johne's disease in Canada. III. Diagnostic complement-fixation tests.**—*Ibid.* 249-254. [Summary in French.] **20**

RICE, C. E., KONST, H. & SMITH, A. N. (1958). **Studies of Johne's disease in cattle. IV. Complement-fixation tests on imported cattle.** — *Ibid.* 289-293. **21**

I. The method of production of the purified protein derivative (P.P.D.) johnin and experimental laboratory tests are described.

II. An account is given of field trials of P.P.D. johnin in numerous herds and the effect of serial intradermal testing in some of the more interesting herds encountered.

Those cases which the test failed to detect were either advanced cases or pre-clinical cases in a temporary low state of reactivity. Positive reactions were mostly supported by clinical, P.M. or microscopic findings.

It was evident that, by repeated periodic intradermal testing with P.P.D. johnin combined with strict sanitary measures, Johne's disease could be controlled and eradicated in herds with histories of intensive infection.

III. Complement-fixation tests demonstrated reactors in 9 of 39 herds suspected of harbouring infected animals. In comparison with the results of intradermal tests with P.P.D. johnin and microscopic examination of tissue specimens for acid-fast organisms, it was evident that, although a few cases were missed by both methods, parallel use of the two tests increased the proportion of non-clinical cases found.

IV. Since January 1954, 1,472 cattle imported from overseas have undergone intradermal P.P.D. johnin test and complement-fixation tests. Reactors to the intradermal test amounted to 6·5% as compared with 0·4% with titres of 1:20 or higher in the c.f. test. Reasons for the difference in the results of the two tests are discussed briefly.

—R. V. L. WALKER.

DICKIE, A. T., LAUDER, I. M., TAYLOR, D. C. & THORPE, E. (1958). **Two cases of *Erysipelothrix monocytogenes* infection in cattle.** — *Vet. Rec.* **70,** 733-735. [Authors' summary modified.] **22**

Two cases of *E. monocytogenes* infection in adult cattle are described. Diagnosis was confirmed by bacteriological and pathological examinations. A brief review of the position with regard to this infection in America and Gt. Britain is made.

JACOTOT, H. (1958). Vaccination contre la pasteurellose des boeufs et des buffles. **[Immunization of cattle and buffaloes against haemorrhagic septicaemia.]**—*Rev. Élev.* **11,** 143-146. [Summaries in English and Spanish. English summary modified.] **23**

This article should have appeared in 1940 but the results of the experimentation are still of interest. The author details the preparation of a vaccine in which the antigenic properties of the endotoxin of *Pasteurella septica* are utilized. The vaccine is prepared by submitting a concentrated suspension of certain selected strains of *Past. septica* to the action of heat in the presence of distilled water. The vaccine has been used largely either in this form or modified by the addition of an adjuvant, viz. the latex of *Hevea brasiliensis*.

DHANDA, M. R. & LALL, J. M. (1958). **Control of haemorrhagic septicaemia with special reference to the new adjuvant vaccine.** — *Indian vet. J.* **35,** 389-402. [Authors' summary modified.] **24**

The problem of haemorrhagic septicaemia in cattle and buffaloes in India with particular reference to control is discussed.

Serological and immunological studies of various strains of *Past. septica* and the development of an adjuvant vaccine are reported.

Large-scale field and laboratory tests have shown the adjuvant vaccine to be safe for cattle and buffaloes of all ages and that in its immunizing properties it is far superior to the commercial broth vaccine.

The immunity following vaccination with the new adjuvant vaccine was solid for at least 10 months.

The vaccine does not deteriorate in its protective properties for at least one year when stored at low room temp. It withstands fairly high temperatures and can be safely transported by rail or road under ordinary conditions to distant places covering a travelling period of about 10 days during the hot summer months.

HAGEN, K. W., JR. (1958). **Enzootic pasteurellosis in domestic rabbits. I. Pathology and bacteriology.**—*J. Amer. vet. med. Ass.* **133,** 77-80. [Author's summary modified.] **25**

Of 857 young rabbits 35 developed respiratory infection and died. *Pasteurella septica* was

isolated in culture from the lungs of 19. *Haemophilus bronchisepticus* and *Staph. pyogenes* were also isolated, but less frequently.

Fungi or mycobacteria were not demonstrable culturally. Bronchopneumonia, with hepatization, consolidation and necrosis, was present. The trachea was inflamed, and the bronchi contained a thick, purulent exudate. It is considered that natural transmission is from mother to offspring, *via* the respiratory route, within a few days after birth.

LUDFORD, C. G. & STEVENS, M. S. (1958). **The isolation of *Klebsiella pneumoniae* from a case of canine pneumonia.**—*Aust. vet. J.* **34,** 253-255. [Authors' summary modified.] **26**

K. pneumoniae was isolated from the lungs of a dog that became sick and died within 48 hours. P.M. examination showed an extensive pneumonia and a heavy burden of *Ancylostoma caninum*. It is believed that the pneumonia precipitated death of the animal. Cultural and biochemical properties of the strain of *K. pneumoniae* are described.

MORTELMANS, J., HUYGELEN, C. & PINCKERS, F. (1958). **Isolation of *Salmonella infantis* from an aborted bovine foetus.** — *Nature, Lond.* **181,** 1539-1540. **27**

In the Belgian Congo, a 5-month-old bovine foetus was found to be infected with a *Salmonella* species serologically diagnosed as *S. infantis*, VI, VII: *r*: 1·5. This was believed to be the first recorded case of bovine abortion caused by this organism.—E.V.L.

HUEY, C. R. & EDWARDS, P. R. (1958). **Resistance of *Salmonella typhimurium* to tetracyclines.** — *Proc. Soc. exp. Biol., N.Y.* **97,** 550-551. **28**

Strains of *S. typhi-murium* isolated from man and animals before 1948, *i.e.* before the use of antibiotics in animal nutrition and therapeutics, and an equal number of strains isolated after 1956 were tested for resistance to antibiotics. Significant results were obtained only in the case of the tetracyclines and recently isolated strains (5% of those from man and 9% of those from fowls). A possible association between these results and the inclusion of tetracyclines in poultry food is suggested.

—T.E.G.R.

CARNAGHAN, R. B. A. & SOJKA, W. J. (1958). **Arthritis in chicks due to a variant strain of *Salmonella pullorum*.**—*Vet. Rec.* **70,** 645-649. [Authors' summary modified.] **29**

An account is given of 3 outbreaks of pullorum disease in broiler chicks, in which arthritis was a common feature. In each outbreak it was shown that a variant strain of *S. pullorum* was responsible for the lesions (antigenic structure 9, 12_1, 12_2, (12_3):—, :—:). The arthritis was reproduced in chicks by administration of cultures of the organism.

JEFFRIES, C. D. & HOLTMAN, D. F. (1958). **Growth response of *Salmonella pullorum* in the chicken embryo.**—*Amer. J. vet. Res.* **19,** 736-739. [Authors' summary modified.] **30**

The minimum lethal dose of *S. pullorum* for embryonating eggs was found to be as little as one organism upon intra-allantoic inoculation. The growth rate of the organism in the allantoic fluid was exponential, the maximum approaching 10^9 organisms per g. of allantoic fluid.

Little difference was observed in the pathogenicity for chick embryos of bacterial cells from "tryptose-soytone" medium and the medium described by Gilfillan & others [*V.B.* **26,** 2192].

DOOLEY, E. S., HOLTMAN, D. F. & JEFFRIES, C. D. (1958). **Alterations in the blood chemistry of chicks treated with the endotoxin of *Salmonella pullorum*.**—*J. Bact.* **75,** 719-723. [Authors' summary modified.] **31**

Chromatographic analyses of the blood of chicks treated with *S. pullorum* endotoxin revealed a decrease in arginine, glycine and methionine. Parallel with these changes there was an increase in non-protein nitrogen, urea, creatinine, uric acid, ammonia, and inorganic phosphorus. Blood sugar decreased at 24 hours after treatment. The administration of arginine to intoxicated chicks caused a reduction in the peripheral blood ammonia accompanied by an increase in blood urea. It is suggested that a metabolic pattern involving the known pathway for creatinine synthesis and the Krebs ornithine cycle accounts, in part, for the disappearance of the amino-acids from the blood, for the increased blood urea and creatinine, and for the conversion of blood ammonia into other substances, especially urea and creatinine. The protective action of arginine in intoxicated chicks is attributed to its ability to stimulate conversion of blood ammonia into less toxic end products.

SIEBURTH, J. McN. (1958). **The indirect hemagglutination test in the avian salmonella problem.** — *Amer. J. vet. Res.* **19,** 729-735. [Author's summary modified.] **32**

A polyvalent antigen could be used in the indirect haemagglutination test to detect salmonellosis in fowls and turkeys. Indirect haemagglutinins appeared earlier, persisted longer and were approx. ten times higher than direct agglutinins. Polyvalent and monovalent pre-

parations were equally sensitive and the difference in titres between an uninfected flock and a flock infected with *S. typhi-murium* appeared adequate for diagnostic purposes. Monovalent preparations used as a plate test gave results similar to the tube test. Unlike the agglutination test, the indirect haemagglutination test detected antibodies in furazolidone-treated chickens.

MARR, T. G. & WILLIAMS, H. (1958). **Brucella infection in the dairy herds of Northern Scotland.**—*Vet. Rec.* **70,** 419-423. [Authors' summary modified.] **33**

In an investigation from 1954 to 1956, 25% of the dairy herds in the northern counties of Scotland were positive to the milk ring test. *Br. abortus* was recovered from about 25% of the positive samples of bulk milk. Examination of individual animals by means of agglutination tests on serum and vaginal mucus, milk ring tests and cultures of milk showed that many cows with positive milk ring and vaginal mucus tests were excreting brucella in the milk. Vaccination with Strain 19 did not appreciably affect the results of the milk ring test.

KERR, W. R., PEARSON, J. K. L. & RANKIN, J. E. F. (1958). **A brucellosis survey in dairy herds with particular reference to diagnostic methods including the vaginal mucus test.**—*Vet. Rec.* **70,** 503-508 & 509. [Authors' summary modified.] **34**

The incidence of *Br. abortus* infection was determined in 147 dairy herds in Northern Ireland. The results are recorded and the methods of carrying out a programme of eradication are discussed. The presence or absence of disease in each herd, and in each cow, was determined by the combined use of agglutination tests on blood serum, milk whey, and vaginal mucus, and also by g.pig inoculation. The severe limitations of the serum test imposed by the use of live *Br. abortus* vaccine are demonstrated. This vaccine also causes difficulty in interpreting the whey agglutination test in certain circumstances. Tests on vaginal mucus are not influenced by the use of the Strain 19 vaccine s/c, and the use of this test as a diagnostic agent is discussed. Some herds contained one or more vaccinated cows which disseminated infection *via* the udder and were not suspected by their owners. The small proportion of these herds reported by the public health authorities is mentioned and the limitations of the present system of random testing of bulk milk are noted. The possible use of Strain 19 vaccine intravaginally is being explored and some results are given of experimental work in this connexion.

SHIBATA, S., ISAYAMA, Y. & MURATA, M. (1958). **Studies on the classification on brucella organisms. I. Biological comparison between strains isolated from imported Jersey and domestic Holstein cows.**—*Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 34, pp. 31-37. [In English. Summary in Japanese pp. 29-30. English summary modified.] **35**

Strains of *Brucella abortus* were isolated from imported Jersey cows and from locally bred Holstein cows. The strains from the Jerseys presented the typical characters of *Br. abortus;* those from the Holsteins were more sensitive to dyes and penicillin. The relationship between the latter group of 9 strains and *Br. abortus* Type II (Wilson) are discussed.

STERNE, M. (1958). **The growth of *Brucella abortus* Strain 19 in aerated dialysed media.**—*J. gen. Microbiol.* **18,** 747-750. [Author's summary modified.] **36**

An apparatus for growing *Br. abortus* in a dialysed medium in an aerated cellophane tube is described, from which 500 ml. of culture of Strain 19 having a density of 7 to 10×10^{11} organisms per ml. (equivalent to 50–70 g. dry weight of organisms per litre) could be harvested every 3 days.

KAWASHIMA, H., YANAGAWA, R., ISAYAMA, Y. & HIROTA, E. (1958). **Experimental studies on brucella infection in mice under the influence of sex hormones.** — *Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 34, pp. 40-54. [In English. Summary in Japanese p. 39.] **37**

A study was made of brucellosis in immature, in ovariectomized and in mature mice (in different phases of oestrus or pregnancy) treated with sex hormones. No relationship was observed between infection, puberty and sex hormones.—T.E.G.R.

MEYER, M. E. & CAMERON, H. S. (1958). **Species metabolic patterns within the genus brucella.**—*Amer. J. vet. Res.* **19,** 754-758. **38**

Differences in metabolism are particularly valuable in distinguishing *Br. suis* from the other two species. Differences between *Br. abortus* and *Br. melitensis* are not as striking but, nevertheless, are characteristic. [See also *V.B.* **27,** 2354.] —R.M.

ROBERTS, S. J. (1958). **Sequelae of leptospirosis in horses on a small farm.** — *J. Amer. vet. med. Ass.* **133,** 189-194. [Author's conclusions modified.] **39**

Clinical and serological evidence indicate

that leptospirosis and periodic ophthalmia in horses are closely associated.

Confirmed leptospirosis occurred in 6 of 16 horses, in 1952, and was followed by periodic ophthalmia in 5 of the 6 affected animals. Four of them developed periodic ophthalmia 12 to 24 months after the acute illness; the other developed iridocyclitis 24 to 48 hours after the onset of the acute illness.

This six-year study indicates that once a horse is exposed to *Leptospira pomona* it developes a blood titre that, with few exceptions, persists for many years or for its lifetime.

The agglutination-lysis test may be of value in determining whether a suspicious ocular lesion is periodic ophthalmia.

Treatment of horses with recurring attacks of periodic ophthalmia, with various antibiotics, was unsuccessful. However, antibiotic treatment of iridocyclitis associated with the acute illness caused by *L. pomona* seemed of value.

Routine feeding of at least 40 mg. of riboflavin daily to this group of horses did not control or prevent the occurrence of periodic ophthalmia.

BRIDGES, C. H. (1958). **Bovine fetal leptospirosis.** — *Sthwest. Vet.* **11,** 271-274. [Author's summary modified.] **40**

Gross and histopathological findings on six specimens of bovine foetal leptospirosis are described. These data emphasize suggestions of other investigators that leptospiral infection of the foetus is a major cause of the abortions in bovine leptospirosis and that histopathological examination is a most successful method of demonstration of the leptospires in aborted foetuses.

BOULANGER, P. (1958). **Agglutination tests on leptospirosis in cattle.**—*Canad. J. Publ. Hlth* **49,** 142-147. [Summary in French. Author's summary modified.] **41**

Results of the plate and tube agglutination tests for leptospirosis using formolized antigen were similar to those of the agglutination-lysis test. The simplicity of these tests renders their use possible in most laboratories and eliminates the necessity of maintaining live leptospiral cultures. As in the case of the agglutination-lysis test, the clinical history of each individual animal and of the herd is necessary for the evaluation of results.

ROBERTS, C. S. & TURNER, L. W. (1958). **The susceptibility of the chinchilla** (*Chinchilla laniger*) **to** *Leptospira pomona.* — *J. Amer. vet. med. Ass.* **132,** 527-528. [Authors' summary modified.] **42**

Comparative tests emphasize the greater susceptibility of the chinchilla, as compared with the young g.pig and hamster, to a field strain of *L. pomona.*

BAUER, D. C. & MORSE, E. V. (1958). **Variation and hemolysin production in relation to virulence of** *Leptospira pomona.*—*Proc. Soc. exp. Biol., N.Y.* **98,** 505-508. [Authors' summary modified.] **43**

Changes in virulence of strains W and O of *L. pomona* for hamsters after serial transfers in a fluid medium were studied. Strain W, originally harmless, killed hamsters. Both strains decreased in virulence during the first 4 passages. After 4 to 8 passages virulence increased. Titrations of subsequent passages (12 to 24) of strain W indicated a gradual loss of virulence. *In vitro,* there was no correlation between haemolysin production and virulence. The changes in virulence and the possible significance of haemolytic activity of leptospira are discussed.

HALE, M. W. (1958). **Laboratory report on leptospirosis in Georgia—1957.**—*J. Amer. vet. med. Ass.* **133,** 196-197. [Author's summary modified.] **44**

During 1957, micro-agglutination tests for leptospirosis were made on serum samples from 1,394 cattle, 480 pigs, 3 dogs, and 3 horses, using leptospiral antigens in fourfold dilutions of serum from 1:100 to 1:6,400. The predominating serotype found in pigs was *L. pomona,* while *L. sejroe* predominated in cattle. Agglutinins against *L. autumnalis, L. grippotyphosa,* and *L. ballum* were found in both cattle and pigs in small numbers. Reactions to *L. canicola* occurred in two dogs, and one horse was positive to *L. pomona.*

LILLY, H. A. (1958). **A study in culture methods for clostridia.**—*J. med. Lab. Tech.* **15,** 165-174. [Abst. from author's summary.] **45**

The incorporation of neomycin in Nagler plates at a concentration of 100 μg. per ml. facilitates the isolation of *Cl. welchii* Type A. The inhibition of organisms giving a false lecithinase reaction is perhaps the greatest advantage in the use of this medium.

KATIĆ, R., PUHAČ, I., GLIGORIJEVIĆ, J., HRGOVIĆ, N. & VUKIĆEVIĆ, Z. (1957). **[Effect of ultrasonic waves on** *Clostridium welchii* **A toxin.]** — *Acta vet. Belgrade* **7,** 45-48. [In Serbian. Summary in English.] **46**

Toxin production by *Cl. welchii* Type A was not affected by exposure to ultrasonic waves for 5–30 min., but the toxin formed lacked component κ and the amount of component θ was

considerably reduced. Exposure of toxin to ultrasonic waves destroyed component κ and reduced the amounts of component θ and of α-lecithinase. Variation in the intensity and duration of exposure produced no significant changes.—E.G.

RODENBERG, S. D. (1958). **Comparative study of bacterial extracts by analytical electrophoresis.**—*J. Bact.* **76,** 84-93. [Author's summary modified.] **47**

One hour of sonic oscillation was found to be a satisfactory method of obtaining bacterial extracts suitable for characterization by analytical electrophoresis. The electrophoretic patterns of the extracts for 28 cultures of bacteria were described.

FERTIG, S., KASZUBKIEWICZ, C. & WASIUKIEWICZ, W. (1958). Enzootyczne zwyrodnienie mięśni i moniliaza płuc u jagniąt rasy "Kent". **Enzootic muscular degeneration and pulmonary moniliasis in lambs.**] — *Méd. vét., Varsovie* **14,** 135-141. [In Polish. Summaries in English and Russian.] **48**

An account of an outbreak lasting from February to April. The clinical symptoms were dyspnoea, cough, ataxia and in some cases paraplegia; 60% of the lambs in the flock died and the outbreak terminated spontaneously in May. Administrations of vitamins A, D, E, B and C, antibiotics and calcium, were of no avail. The main lesions were hyaline degeneration of the heart and skeletal muscles, purulent pneumonia and numerous necrotic foci in the lungs associated with presence of *Candida guilliermondi*. The yeast was recovered in culture and could be seen in histological sections.—M. GITTER.

BAUM, G. L., SCHWARZ, J. & WANG, C. J. K. (1958). **Treatment of experimental histoplasmosis with amphotericin B.**—*Arch. intern. Med.* **101,** 84-86. **49**

An antifungal antibiotic, amphotericin B, prepared from an unidentified species of *Streptomyces*, has activity against *Histoplasma capsulatum*. The authors reported on tests on 150 artificially infected hamsters; it was found that, although sulphadiazine alone had little or no effect, the effect of amphotericin B was enhanced when combined with it. These appear to be preliminary tests though rather strong claims are set out. The antibiotic does not appear to be at an advanced stage in study of its qualities.

—W.A.P.

VOGEL, R. A. & PADULA, J. F. (1958). **Indirect staining reaction with fluorescent antibody for detection of antibodies to pathogenic fungi.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 135-139. [Authors' summary modified.] **50**

Antibodies in sera from patients with histoplasmosis, moniliasis or blastomycosis were demonstrated by the indirect method of staining with fluorescent antibody. In spite of a general autofluorescence of pathogenic fungi, addition of human antiserum and a fluorescein-labelled rabbit anti-human gamma globulin resulted in characteristic fluorescence. In cryptococcosis antibodies were demonstrated by the fluorescent technique but not by other serological methods.

RHOADES, H. E. (1958). **The effect of storage on viability of lyophilized cultures of bacteria, viruses, yeasts, and molds.**—*Amer. J. vet. Res.* **19,** 765-768. [Author's summary modified.] **51**

Cultures of 111 strains of bacteria, fungi, yeasts, and virus were suspended in Seitz-filtered equine serum and preserved by freeze-drying. Replicates of 53 cultures were stored for ten years at room temperature (approx. 22° to 32°C.) and at refrigerator temp. (approx. 6° to 7°C.). Fifty-eight cultures were stored at refrigerator temp. only.

With the exception of one strain of Newcastle disease virus, there was no difference in survival at room temp. and at refrigerator temp. of cultures stored for ten years. Freeze-dried cultures of the turkey sinusitis agent, Aujeszky's disease virus, and one strain of Newcastle disease virus, did not survive storage for the period tested.

PIERCY, S. E. & KNIGHT, G. J. (1958). **Studies with avianised strains of the organism of contagious bovine pleuropneumonia. V. Experiments with avianised vaccines at various levels of attenuation.**—*Brit. vet. J.* **114,** 245-253. [Authors' summary modified.] **52**

A number of experiments with Strain T_1 attenuated avianized pleuropneumonia vaccines are described. Although these vaccines conferred a significant degree of protection against challenge with virulent cultures they did not create complete immunity.

The existence of a proportion of naturally semi-resistant animals is considered to be the probable explanation of the failure of well-attenuated vaccines to immunize the whole of any cattle community.

Total immunization was achieved by using more virulent vaccines containing organisms from lower egg-passages. A small percentage of severe vaccine reactions, however, occurred.

It is suggested that in circumstances where

vaccine reactions must be strictly confined, a logical approach might be to use Strain T_1 attenuated vaccine in the first place, followed by a second inoculation with more virulent vaccine to immunize the semi-resistant proportion of the cattle population.

LUKAČEVIĆ, J., MILAKOVIĆ, L. & KOVAČEVIĆ, M. (1958). Bakteriološka flora sperme bikova od laboratorija do terena. [**Bacteriological flora of bull semen.**]—*Vet. Glasn.* **12**, 424-429. [In Croat. Summary in German.] **53**

The bacterial content of 60 semen samples from 15 bulls was examined after collection and cooling to room temp., after addition of dihydrostreptomycin sulphate, after dilution and storing for 3–4 days in a refrigerator and, of samples dispatched for insemination and returned unused. A total of 62 bacterial species was isolated but only *Pseudomonas pyocyanea* appeared to be a constant contaminant.—E.G.

MULCOCK, A. P. & FRASER, I. E. B. (1958). **Total counts of microorganisms in the fleece of two Corriedale fleece types.** —*Aust. J. agric. Res.* **9**, 704-707. [Authors' summary.] **54**

The number of bacteria in the fleece of Corriedale sheep has been shown to vary with rainfall. A significant difference has also been found between the numbers of bacteria in the fleece of sheep which have been selected as immune and susceptible, respectively, to bacterial discoloration. After heavy rain no difference could be found in the numbers of bacteria in the two fleece types, but susceptible fleeces tended to have a greater and less variable number of bacteria than immune fleeces over the subsequent drier periods.

See also absts. **98** (Newcastle disease virus from cattle with shipping fever); **173** (bact. flora of the crop in turkeys); **285** (report, Republic of Ireland); **286-287** (report, Australia); **291** (report, Uganda); **292** (book, bacteriology); **293** (textbook, microbiology and general epidemiology); **294** (book, leptospirosis in man and animals); **295** (advances in veterinary science).

DISEASES CAUSED BY PROTOZOAN PARASITES

TRUMIĆ, P. & TURUBATOVIĆ, R. (1957). [**Immunology of dourine.**]—*Acta vet. Belgrade* **7**, 5-21. [In Serbian. Summary in German.] **55**

Resistance to re-infection persisted for nearly nine months in a mare following experimental infection with *Trypanosoma equiperdum*. In dogs immunity lasted for three years. Specific antibodies were not demonstrable during the period of immunity. Trypanosomes were stated to produce toxin only during reproduction. They do not contain endotoxins. Antitoxic components were present in the serum of mice, rats and g.pigs which had been treated with live trypanosomes, but not in animals hyperimmunized with killed vaccines. Presence of large numbers of thrombocytes in the blood of mice and rats was ascribed to the effect of toxin on bone marrow and spleen. Resistance to re-infection which persisted in rats for two months following injection of antrycide methyl sulphate was explained by the slow resorption of the drug. Hyperimmune serum acted against toxins but not against live trypanosomes. —E.G.

MAGIMEL, J. (1958). Recherches sur le prothidium. I. Solubilité, toxicité; valeur préventive en conditions d'infestation naturelle en Oubangui-Chari. [**Studies on prothidium. I.**] —*Rev. Élev.* **11**, 147-152. [Summaries in English and Spanish. English summary modified.] **56**

Prothidium is soluble in boiling water at between 2·5–3%, but to prevent precipitation the solution should be used the same day. Toxicity depends on the general health of the animals and particularly on their degree of intestinal parasitism. In doses of 2–3 mg./kg. inoculated i/m in an aq. soln. of 2·5% prothidium causes no local or general reaction.

The prophylactic value of this drug against *T. vivax* and *T. congolense* was studied in young zebu cattle exposed to severe infection. The author estimates that under such conditions the minimum duration of protection is 120 days for a dose of 2 mg./kg. and 180 days for a dose of 3 mg./kg. He notes also the trypanocidal value of prothidium.

ALWAR, V. S. (1958). **Experimental transmission of** *Trypanosoma evansi*.—*Indian vet. J.* **35**, 412-415. [Author's summary modified.] **57**

T. evansi was cultivated in pigeon and duck embryos. The infection in the embryos was noticed in 48–72 hours. One-third of the birds hatched from the inoculated eggs harboured the parasites.

Successful transmission of *T. evansi* with the parasitized blood from the mammalian host was effected in freshly hatched or day-old pigeon squabs, ducklings and turkey chicks. The flagellates were found in the blood after a minimum of 5 days and persisted for a maximum of 24 days. The infection from the pigeon was also transmitted to another squab.

The virulence of the organism was unaltered during passage in ducks and turkeys. But in

white rats inoculated with the strain from pigeons the trypanosomes were demonstrable in the blood after 3 to 8 weeks only and the rats died 2 to 10 weeks later, evidently manifesting attenuation of the virulence.

DIAMOND, L. S. & RUBIN, R. (1958). **Experimental infection of certain farm mammals with a North American strain of *Trypanosoma cruzi* from the raccoon.**—*Exp. Parasit.* **7,** 383-390. **58**

This article gives details of work previously published in brief [*V.B.* **27,** 422].—R.M.

DYLKO, M. I. (Translated by: JASTRZEBSKI, T.) (1958). Rozpoznawanie zarazy rzęsistkowej bydła za pomocą odczynu alergicznego. **[Allergic test for the diagnosis of trichomoniasis.]**—*Méd. vét., Varsovie* **14,** 230-233. **59**

Two allergens were used: an autoclaved filtrate of lysed trichomonad cultures ("Trichomonadolysate"), and tyndallized concentrated cultures ("Fetyn"). The tests yielded 3·5 to 5·5 times more positive results than cultural examination. Control animals affected with brucellosis; TB.; TB. and brucellosis; TB. and necrobacillosis; vibriosis or purulent metritis did not react. Trichomonas-infected animals reacted to "Fetyn" within 9–12, and to "Trichomonadolysate" within 24–36 hours. In D.'s opinion "Fetyn" should find general application in diagnosis of trichomoniasis.—M. GITTER.

MCTACKETT, A. R. (1956). **Oestral cycles and conception rates in two *Trichomonas foetus* infected dairy herds in Queensland.**—*Qd J. agric. Sci.* **13,** 229-239. **60**

Trichomoniasis caused delayed returns to service due probably to foetal death and resorption rather than abortion. The presence of *Tr. foetus* in the genital tract of the cow had no effect by itself on the length of oestral cycles. No single pattern was evident in service cycles and conception rates which could be considered as typical of trichomoniasis from a diagnostic viewpoint.—A. W. BLACKSHAW.

TODOROVIĆ, R. (1958). Prilog nalazu *Trichomonas genitalis*-a (Mazzanti) u uterusu zaklanih krava. **[Presence of *Trichomonas foetus* in the uterus of slaughtered cows.]**—*Vet. Glasn.* **12,** 36-38. [In Croat.] **61**

Of 432 slaughtered cows and heifers examined at the Belgrade abattoir, *Tr. foetus* was demonstrated in the uterus of three apparently healthy cows, and in four with pyometra.—E.G.

PERKUČIN, R. (1958). Prilog lečenju endometrita krava zaraženih trihomonijazom lokalnom aplikacijom stilbestrola i lugola. **[Treatment of *Trichomonas foetus* endometritis in cows by local application of stilboestrol and Lugol's solution.]**—*Vet. Glasn.* **12,** 91-93. [In Croat.] **62**

Endometritis was cured in 55 of 67 cows from a herd infected with trichomoniasis by intra-uterine application of 5–8 ml. of a stilboestrol–Lugol's soln. mixture. Three cows with endometritis, not associated with trichomoniasis, were cured by a similar dose of a mixture of stilboestrol and 400,000 i.u. of penicillin. All those treated later became pregnant.—E.G.

WELD, J. T. & KEAN, B. H. (1958). **A factor in serum of human beings and animals that destroys *T. vaginalis*.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 494-496. [Authors' summary modified.] **63**

Serum from human beings and from several species of animals rapidly kills *Trichomonas vaginalis*. This activity is destroyed by heating of the serum to 56°C. for 30 min.

BULL, P. C. (1958). **Incidence of coccidia (Sporozoa) in wild rabbits, *Oryctolagus cuniculus* (L.), in Hawke's Bay, New Zealand.**—*N. Z. J. Sci.* **1,** 289-329. **64**

About 5,000 rabbits, collected in the Gwavas Forest, Hawke's Bay, were examined for infection with coccidia, especially *Eimeria stiedae*, and with a view to possible relationships with the age of the rabbits, sex, density of populations, seasonal and annual incidence of infections, and the localities where the collections were made.

Rabbits 6 to 11 weeks of age (paunched weights 300 to 800 g.) had the highest incidence of infection (91% in 1950–1951), and the acquisition of resistance by virtue of previous infection can be assumed. The sex of the host has little, if any, influence on the infection rate. Differences in the infection rate due to the locality of the collection were considered most often to reflect the numbers of young rabbits in previous populations rather than direct environmental effects on oocyst survival. Long breeding seasons provide a continuous supply of young rabbits which deposit large numbers of oocysts. Later generations of rabbits are likely to receive massive infection and to develop severe coccidiosis. Conversely a short breeding season will increase the period that oocysts must survive on the ground before encountering the next generation of susceptible hosts. During this period the number of viable oocysts on the ground gradually declines and when young rabbits eventually appear they will develop only mild infections.

On theoretical grounds it can be calculated that in wild rabbit populations, up to the age of 120 days, mortality due to coccidiosis averages about 19% per 26-day period. It may be as high as 50%.

It is concluded that *E. stiedae* is well adapted as a density-dependent factor in the natural control of rabbit populations, and that it played a significant role in the past. The degree of control exerted by this and by other natural factors is, however, well below the standards acceptable to the rabbit control authorities.

—S. Brian Kendall.

Šibalić, S. (1957). **[Coccidia from fowls in Serbia.]**—*Acta vet. Belgrade* **7**, 93-101. [In Serbian. Summary in German.] **65**

Coccidiosis in fowls in Serbia is caused by *Eimeria tenella, E. mitis, E. maxima* and *E. acervulina. E. tenella* is the most common, and responsible for the death of hundreds of thousands of chicks annually. The biology and ecology of these parasites were studied with a view to control.—E.G.

Cuckler, A. C., Chapin, L. R., Malanga, C. M., Rogers, E. F., Becker, H. J., Clark, R. L., Leanza, W. J., Pessolano, A. A., Shen, T. Y. & Sarett, L. H. (1958). **Antiparasitic drugs. II. Anticoccidial activity of 4, 5 imidazoledicarboxamide and related compounds.**—*Proc. Soc. exp. Biol., N.Y.* **98**, 167-170. [Authors' summary modified.] **66**

Preparation of 7 substituted imidazoles was described. Anticoccidial activity was demonstrated for imidazole-4-carboxamide and certain related compounds. The most potent compound was 4, 5-imidazoledicarboxamide (glycarbylamide).

Petrović, K. (1958). Prilog poznavanju rasprostranjenosti piroplazmoze u N.R. Srbiji. **[Incidence of piroplasmosis in Serbia.]** — *Vet. Glasn.* **12**, 502-507. [In Croat. Summary in French.] **67**

Mortality from piroplasmosis in horses in Serbia was estimated at 15% of those infected. The disease, caused by *Babesia caballi* and *Nuttallia equi*, occurs sporadically in the regions south of the rivers Save and Danube, where also incidence of *B. bigemina, B. bovis* and *B. divergens* infection in cattle is high, causing death in 6–13%. Bovine infection was also present in the north-western part. Ovine infection has been recorded nearly everywhere, except in the northern and north-western parts, even on pastures at altitudes of 3,000 ft.—E.G.

Tokin, I., Kolić, I. & Šebetić, Č. (1958). O prenošenju nutalioze konja transfuzijom krvne plazme i osposobljavanju takve plazme za neškodljivu primenu. **[Transmission of *Nuttallia equi* to horses by plasma transfusion.]**—*Vet. Glasn.* **12**, 247-257. [In Croat. Summary in German.] **68**

Transmission of *Nuttallia equi* infection by transfusion of plasma from experimentally infected horses was prevented by storing plasma for 31 days at room temp. or for 6–11 days at 4°C., by freeze-drying of plasma, by the addition of 10% of a 5% carbolic acid soln., or 0·1% of a 10% thiomersal soln.—E.G.

Alexandrov, N. A. (1958). **[Duration of resistance of horses to repeated infection with *Nuttallia equi* after trypaflavine therapy.]** — *Veterinariya, Moscow* **35**, No. 5 p. 49. [In Russian.] **69**

Horses with *N. equi* infection were treated with 150–200 ml. of a 1% soln. of trypaflavine. Parasiticides were applied and ticks (chiefly *Hyalomma plumbeum*) were removed periodically. On one farm, of 26 treated horses not one developed *N. equi* infection in the following year, whereas of 142 horses previously free from the infection 12 became infected. On another farm, 25 of 148 previously healthy horses developed the infection compared with 4 of 67 horses treated 2 years previously. It is concluded that satisfactory immunity to *N. equi* lasts for a year in affected horses treated with trypaflavine. In 2 years some will again become infected.

—M.G.G.

Angelovski, T. (1958). O jednoj epizootiji piroplazmoze kod importiranih Merino ovaca na području Vardar—Čiflika kod Negotina na Vardaru. **[Piroplasmosis in imported sheep in Yugoslavia.]**—*Vet. Glasn.* **12**, 21-22. [In Croat.] **70**

Piroplasmosis was diagnosed in 10 of a flock of 420 Merino sheep imported from France.

—E.G.

See also absts. 288 (report, Federation of Rhodesia and Nyasaland); 291 (report, Uganda); 293 (textbook, microbiology); 295 (advances in veterinary science).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

NIETO, F. M. & SEGRE, D. (1958). **The resin-agglutination test for vesicular stomatitis.** — *Amer. J. vet. Res.* **19**, 761-764. [Authors' summary modified.] **71**

Forty-three serums with neutralizing antibodies for vesicular stomatitis (VS) virus were titrated with both the serum-neutralization test and the resin agglutination-inhibition test described by Segre [*V.B.* **27**, 3016]. A good correlation was shown between the titres obtained with the two tests.

Resin-agglutination titres of allantoic fluid, chorioallantoic membrane, and chick embryo at different times after inoculation with VS virus indicated that the viral antigen was more abundant and appeared earlier in the embryo than in the chorioallantoic membrane or the allantoic fluid. No correlation was found between infectivity and titre.

A marked cross reaction was observed between the two immunological types of VS virus. Treatment of the virus with heat or formalin destroyed its infectivity, but not its antigenicity, as detected with the resin test. The possibility is discussed that the antigen detected by this test might be separate from the infectious viral particles.

PATTERSON, W. C., MOTT, L. O. & JENNEY, E. W. (1958). **A study of vesicular stomatitis in man.**—*J. Amer. vet. med. Ass.* **133**, 57-62. [Authors' summary modified.] **72**

Vesicular stomatitis (VS) in man is an acute, self-limited infection clinically similar to influenza. 54 cases were diagnosed among laboratory workers, trainees, and animal handlers at Beltsville. Of the lab. workers and animal handlers working on VS during a period of seven years, 96% gave positive serological reactions. Of three groups training for a two-week period, 70% had positive titres. Of the men showing positive VS titres, 57% had clinical symptoms. VS in man is more common than previously suspected.

ERCEGOVAC, D. & DRAGOJEVIĆ, V. (1958). Slučaj besnila krave posle partusa. **[Rabies in a cow after parturition.]**—*Vet. Glasn.* **12**, 543. [In Croat. Summary in English.] **73**

A cow which had been bitten by a rabid dog, died of rabies eight months later, after having given birth to a calf which remained healthy during a period of observation of 3 years. This was taken as evidence that rabies virus is not present in the blood of an infected animal.—E.G.

PETROVIĆ, D. M. (1958). Besnilo u NR Srbiji u periodu 1946–1953 — Prilog poznavanju epizootiologije. **[Rabies in Serbia during 1946–1953.]**—*Vet. Glasn.* **12**, 174-179. [In Croat.] **74**

Over 40% of all cases of rabies in Yugoslavia during 1946–1953 occurred in Serbia. The disease was diagnosed in 1,251 dogs, 533 pigs, 440 cattle, 101 sheep, 57 goats, 55 cats, 36 horses and 6 wild animals. During this period the Pasteur Institute at Novi Sad treated 109,512 people, 70% of them from Serbia.—E.G.

DIMITRIJEVIĆ, V. & MARJANOVIĆ, L. (1958). Suzbijanje besnila na Kosovu i Metohiji od 1947 do 1957 godine. **[Control of rabies in the Kosovo–Metohija Region during 1947–1957.]** — *Vet. Glasn.* **12**, 102-107. [In Croat.] **75**

During 1947–57 in the Kosovo–Metohija Region of Yugoslavia rabies was diagnosed in 86 dogs, 9 cattle, 8 pigs, 1 cat, 1 sheep and 12 human beings. During that period 1,708 wolves and a large number of stray dogs were destroyed. Other control measures were preventive vaccination and registration of dogs.—E.G.

CILLI, V. & SCATOZZA, F. (1956). Il frazionamento dei constituenti cellulari applicato alla ricerca del virus fisso della rabbia. Distribuzione del virus nel cervello di conigli paralizzati. Nota I. **[Study of fixed rabies virus in cell components by fractionation. I. Distribution of the virus in the brain of paralysed rabbits.]** — *G. Microbiol.* **1**, 471-480. [Summary in English.] **76**

SCATOZZA, F. & CASTRUCCI, G. (1957). Il frazionamento dei costituenti cellulari applicato alla ricerca del virus fisso della rabbia. II. Comportamento delle frazioni nucleare e citoplasmatica nel corso dell'infezione sperimentale del coniglio. III. Comportamento dei mitocondri, dei microsomi e della frazione solubile nel corso dell'infezione sperimentale del coniglio. IV. Ulteriori indagini sul comportamento del virus presente nella frazione nucleare. V. Ulteriori indagini sul comportamento del virus rilevabile a livello dei miticondri. **[Study of fixed rabies virus in cell components by fractionation. II. In the nucleus and cytoplasm. III. In the mitochondria, microsomes and soluble fraction. IV. Further study of the virus in the nuclear fraction. V. Further study of the virus in the mitochondria.]**—*Ibid.* **4**, 58-67; 68-76; 166-174 & 193-200. [Summaries in English.] **77**

I–V. The distribution of fixed rabies virus in the components of the brain cells of experimentally infected rabbits was studied by cell fractionation.—T.E.G.R.

I. ERCEGOVAC, D. (1958). Postoje li naučne osnove za postinfektivnu vakcinaciju protiv besnila. [**Post-infection vaccination in rabies.**] —*Vet. Glasn.* **12**, 329-337. [In Croat. Summary in English.] **78**

II. ERCEGOVAC, D. (1958). Čime se objašnjava neuspeh postinfektivne vakcinacije protiv besnila. [**Failure of post-infection vaccination in rabies.**]—*Ibid.* 410-418. [In Croat. Summary in English.] **79**

I & II. Failure of post-infection vaccination against rabies was stated to be the result of the comparatively slow production of a sufficiently high antibody level, which was not influenced by the virulence of the strain, the dose, nor the time elapsed between exposure and vaccination. Conventional methods of control, including compulsory preventive vaccination in dogs, were advocated.—E.G.

HAHON, N., RATNER, M. & KOZIKOWSKI, E. (1958). **Factors influencing variola virus growth on the chorioallantoic membrane of embryonated eggs.** — *J. Bact.* **75**, 707-712. [Authors' summary modified.] **80**

The growth of variola virus on the chorioallantoic membrane of embryonated eggs was similar to that of other pock viruses. The latent period varied inversely with the strength of inoculum; the peak was attained in 48 hours; the rate of maximum growth, $10^{3\cdot8}$-fold per 10 hours, was independent of the virus quantity inoculated. Growth was better at 35°C. than at 37° or 39°C. The virus content of membranes varied directly with the dose of inoculum but was not affected by the volume of inoculum. Optimal growth occurred in embryonated eggs inoculated between the 9th and 13th days of incubation.

BYRNE, R. J., QUAN, A. L. & KASCHULA, V. R. (1958). **Responses of horses to a neurotropic strain of equine influenza virus.** — *Amer. J. vet. Res.* **19**, 655-660. [Authors' summary modified.] **81**

A marked antibody response occurred in all horses after s/c injection of virus. Virus was recovered from the lungs of a foetus which was aborted after being injected while in the uterus. Five foals, injected with the virus while in the uterus, were delivered normally. Possible applications of the neurotropic virus as an immunizing agent are discussed.

WHITE, G. (1958). **A specific diffusible antigen of rinderpest virus demonstrated by the agar double-diffusion precipitation reaction.** — *Nature, Lond.* **181**, 1409. **82**

The author has demonstrated a specific antigen–antibody reaction between lymph nodes of rinderpest infected cattle, goats and rabbits and serum of rabbits hyperimmunized against lapinized rinderpest virus. The method adopted was Mansi's modification of Ouchterlony's technique. The precipitin reaction appeared within 24 hours. Demonstration of antigen in the infected tissues depended on the stage of infection at which material was collected for examination. Emphasis is laid on the value of this method in epidemiological studies of the disease. —W. MANSI.

ORSI, E. V. & CABASSO, V. J. (1958). **Infectious bovine rhinotracheitis (IBR). IV. Cytological changes in infected bovine kidney and HeLa cultures.** — *Proc. Soc. exp. Biol., N.Y.* **98**, 637-639. [Abst. from authors' summary.] **83**

Inoculation of a HeLa-adapted strain of bovine infectious rhinotracheitis virus caused nuclear and cytoplasmic degeneration of a similar pattern in bovine kidney cell and in HeLa cell cultures. The nuclear inclusions were Feulgen–negative and the morphological changes in the nuclei were accompanied by a reduction of desoxyribonucleic acid.

WILLIAMS, H. E. (1958). **Growth and titration of louping-ill virus in monolayer tissue culture of pig kidney.**—*Nature, Lond.* **181**, 497-498. **84**

A method of culture of pig kidney was described by means of which continuous monolayers were formed: dilutions of a strain of louping-ill virus were prepared from infected mouse brain and titrated intracranially in four 3 to 5-week-old mice per dilution. The virus was then passaged serially in the monolayer cultures, harvested on the sixth day of incubation and titrated immediately in mice. By the fifth passage the original virus inoculum titre of 4×10^4 mouse LD_{50} doses per ml. was diluted to 10^7 but yielded $3\cdot9 \times 10^7$ mouse LD_{50} doses per ml., showing that the cultures supported multiplication of the virus. A cytopathogenic effect commenced on the second to third day and resulted in almost total cell necrosis and destruction of the monolayers. There was marked inhibition of cytopathogenicity by louping-ill hyperimmune sheep serum.—E.V.L.

LOLIN, M. (1957). [**Blood picture in pigs infected with swine fever virus, following**

vaccination with crystal violet vaccine.]—*Acta vet. Belgrade* **7**, 73-80. [In Serbian. Summary in French.] **85**

Results were discussed of quantitative and qualitative examination of the blood in 30 pigs, aged 6–8 months, carried out at various intervals, following vaccination and revaccination with 5 ml. of crystal violet vaccine, and challenge with swine fever virus. The total number of red and white corpuscles was unchanged, but there was an increase in the percentage of large lymphocytes and a reduction in the number of neutrophiles. Eosinophile leucocytes were not demonstrable in an infected, but not vaccinated pig.—E.G.

TURUBATOVIĆ, R. & PANJEVIĆ, D. (1957). **[Proteinaemia in pigs, immunized and non-immunized against swine fever.]** — *Acta vet. Belgrade* **7**, 61-71. [In Serbian. Summary in German.] **86**

The serum protein content in normal pigs and in those vaccinated with 5 ml. of crystal violet vaccine conformed with results previously described [*V.B.* **28**, 119]. In serum of pigs revaccinated within 2 months there was a relative decrease in gamma-globulins, in those revaccinated after 3 months, the decrease was most striking 14 days after revaccination, but alpha and beta values were higher than in serum of unvaccinated pigs. Revaccination after 4 and 5 months produced no demonstrable differences in serum protein fraction levels, as compared with normal pig serum.—E.G.

ERCEGAN, M. (1958). Terenska ispitivanja imuniteta protiv svinjske kuge posle cepljenja sa atenuiranim virusom. **[Immunity against swine fever following vaccination with attenuated virus.]**—*Vet. Glasn.* **12**, 599-603. **87**

Details were given of immunization against swine fever in 106 pigs, using lapinized virus. Nearly 80% resisted challenge 2–26 weeks later with virulent virus, or exposure to natural infection.—E.G.

SMITH, H. R. & KING, N. B. (1958). **Passive immunity to hog cholera in nursing pigs.**—*J. Amer. vet. med. Ass.* **132**, 107-109. **88**

Four female litter-mates from an unvaccinated sow were used. Gilt 1 was the control; gilts 2 and 3 were immunized at 6 weeks of age against swine fever with 2 ml. of modified virus vaccine and gilt 4 with anti-swine fever serum plus virulent virus. All 4 were bred to farrow at 1 year. After 90 days' gestation, gilt 3 was revaccinated.

Using 8 piglets from each litter, 2 were challenged with 2 ml. of virulent virus at 4 weeks of age, 2 at 6 weeks, 2 at 8 weeks and 2 at 10 weeks of age. Those from the control and from gilt 2 all died; the piglets from gilt 3 resisted challenge at 4 and 6 weeks of age and 1 of the 2 at 8 weeks, while the 10-week-old piglets died; those of gilt 4 resisted challenge at 4 and 6 weeks of age, the 8-week and 10-week-old piglets died. —E.V.L.

COLLINS, K. E. (1958). **Effects of ultraviolet radiation on hog cholera virus.**—*Amer. J. vet. Res.* **19**, 540-544. [Author's summary modified.] **89**

Swine fever virus in serum was irradiated with 2,537 Å radiation. Approximately 10^5 infective doses (i.d.) of virus, when ultraviolet-inactivated, were found to protect pigs aged 2 to 4 months from a 5,000 i.d. challenge. Reactivation of the infectivity of two of three virus preparations occurred when ultraviolet doses appreciably in excess of the initially inactivating dose were used.

MAURER, F. D., GRIESEMER, R. A. & JONES, T. C. (1958). **The pathology of African swine fever — a comparison with hog cholera.**—*Amer. J. vet. Res.* **19**, 517-539. [Authors' summary modified.] **90**

The lesions of African swine fever have been described and compared with those of swine fever. The primary lesions in both diseases are found in lymphatic tissues and in the walls of arterioles and capillaries. The vascular lesions cause oedema, haemorrhage, and infarction, the principal gross lesions. The most significant difference between the two diseases is the severe karyorrhexis of lymphocytes that occurs only in African swine fever.

WITTMANN, G. (1958). Virusspezifische Präzipitation bei der ansteckenden Schweinelähmung (Teschener Krankheit) mit Hilfe des Agar-Diffusionsverfahrens. **[Virus-specific precipitation in Teschen disease with the help of the agar diffusion technique.]** — *Zbl. VetMed.* **5**, 505-514. [Summaries in English, French and Spanish. English summary modified.] **91**

Virus-specific precipitation can be demonstrated by the agar diffusion method between the sera of pigs recovered from Teschen disease and an antigen consisting of tissue culture virus.

Precipitating antibodies were demonstrable in the serum from the third day of illness onwards, after both oral and intracerebral infection, whereas the neutralization test was positive in orally infected animals on the first day of the disease. Both types of antibody could be demonstrated in the blood for several months, although

precipitating antibodies showed a tendency to diminish more quickly in the serum than did the neutralizing ones. These findings suggest that the two types of antibody are not identical. When precipitating antibodies can be demonstrated in the serum, the neutralization test is always positive. On the other hand, when the precipitin test is no longer positive the positive neutralization test may still be obtained. In negative or doubtful cases the test should be repeated.

BERAN, G. W., WERDER, A. A. & WENNER, H. A. (1958). **Enteroviruses of swine. I. Their recognition, identification, and distribution in a herd of swine.**—*Amer. J. vet. Res.* **19,** 545-553. [Authors' summary modified.] **92**

Using tissue culture methods, 376 strains of virus were isolated from the faeces of a population of pigs. Of the 123 strains studied, 121 were antigenically related to one prototype. The virus was distributed widely in pigs 5 to 10 weeks of age, and less widely in younger piglets. Preliminary studies on the role of passive-active immunization of pigs born into the herd indicate that the virus actively infects pigs during the early months of life.

FASTIER, L. B. (1958). **The survival of infectious canine hepatitis virus under various experimental conditions.** — *Vet. Rec.* **70,** 623-626. [Author's conclusion modified.] **93**

The virus of infectious canine hepatitis was rapidly inactivated by a number of chemical and physical agents. This, and the limited survival of the virus upon various materials commonly found in kennels suggest that extracorporeal persistence of virus is not an important factor in the repeated appearance of this disease in dog breeding establishments.

TAJIMA, M. & MOTOHASHI, T. (1958). **Electron micrographs of intranuclear inclusions in hepatic cells of dogs with infectious canine hepatitis.** — *Amer. J. vet. Res.* **19,** 666-674. [Authors' summary modified.] **94**

The intranuclear inclusion bodies in the hepatic parenchymal cells of pups experimentally infected with canine hepatitis virus were studied by electron microscopy.

The bodies were composed of numerous viral particles and an amorphous matrix. The average diameter was approx. 65 mμ in sections from which the embedding plastic was not removed, and approx. 71 mμ in shadowed preparations.

The particles could be divided into three types—uniformly dense particles, those containing a dense central body, and those with transparent cores.

The matrix appeared to have been derived mostly from chromatin and to have been utilized for viral particle formation.

MYKYTOWYCZ, R. (1958). **Contact transmission of infectious myxomatosis of the rabbit,** *Oryctolagus cuniculus.* **(L.)** — *C.S.I.R.O. Wildlife Res.* **3,** 1-6. [Author's summary modified.] **95**

Various factors possibly involved in the contact transmission of myxomatosis were studied. The louse *Haemodipsus ventricosus* and the mite *Cheyletiella parasitivorax* were capable of transmitting the disease, though their efficiency as vectors was of a low order. The disease could be transmitted by prolonged flank-to-flank contact between sick and healthy rabbits, by contamination of the pads of the forefeet with the virus, and sexual activity. Field observations suggest that two parasitic mites, *Bdellonyssus bacoti* and *Schöngastia antipodianum,* might act as vectors in the field.

FOSTER, H. L. (1958). **Comparison of epizootic diarrhea of suckling rats and a similar condition in mice.**—*J. Amer. vet. med. Ass.* **133,** 198-201. [Author's summary modified.] **96**

There appeared to be no essential points of difference, clinically or pathologically, between the condition in mice and rats except that claims have been made regarding transmissibility of the condition in mice (*i.e.,* it is caused by a virus). In the rat, as in the mouse, there are no gastroenteric lesions to account for the diarrhoea, and no "viral" inclusion bodies either in nuclei or cytoplasm of intestinal epithelium have been unequivocally demonstrated. Some cytoplasmic "inclusions" illustrated might more likely be secretory products. Attempts to transmit the disease by intestinal filtrates failed.

FRANKLIN, R. M. (1958). **The growth of fowl plague virus in tissue cultures of chicken macrophages and giant cells.**—*Virology* **6,** 81-95. [Author's summary modified.] **97**

The growth of fowl plague virus in cultures of macrophage cells derived from chicken leucocytes was studied by means of infectivity, haemagglutination, and complement-fixation tests and through the use of fluorescent antibodies. Soluble antigen multiplied in the nucleus and may spread through the cell from one nucleus to another. The haemagglutininating antigen is found only in the cytoplasm and is detected later than soluble antigen. Further fluorescent anti-

body studies on young macrophage cultures suggest that soluble antigen cannot multiply in cells which are undergoing mitosis.

OZAWA, Y. & CHOW, T. L. (1958). **A study and identification of Newcastle disease virus (NDV) from ranch cattle infected with shipping fever.**—*Poult. Sci.* **37,** 802-809. **98**

A virus was isolated by chick embryo passage, from lung tissue of a calf which was one of a herd in which an outbreak diagnosed as shipping fever was causing mortality.

The virus had many of the characteristics of Newcastle disease virus. It was pathogenic for chick embryos and for day-old chicks but not for chicks older than one day. It was not pathogenic for cattle.

The authors consider that there was no likelihood that the virus had been present in the eggs which were used in these experiments.

FELDBERG, W. & LUTTRELL, C. N. (1958). **Observations on myoclonus in cats with Newcastle disease virus.** — *J. Physiol.* **143,** 68-75. **99**

Newcastle disease virus injected into the lateral ventricles of 5 cats produced, 40-60 hours later, encephalomyelitis with rhythmical myoclonus. With this method of inoculation the myoclonus appeared more regularly in muscles innervated by the lower cranial nerves than when the virus was inoculated intranasally, or into the posterior chamber of the eye, or directly into the nervous system. The action of various drugs on the myoclonus was studied.—M.G.G.

HOFSTAD, M. S. (1958). **Antigenic differences among isolates of avian infectious bronchitis virus.** — *Amer. J. vet. Res.* **19,** 740-743. [Author's summary modified.] **100**

14 isolates of avian infectious bronchitis virus were studied by reciprocal serum-neutralization tests, in an attempt to demonstrate antigenic differences. An additional isolate was tested against 14 prepared antisera. Three isolates were immunologically distinct; two of these were considered to be strains of avian infectious bronchitis virus because they resembled other isolates in pathogenicity for chickens and chick embryos; the third requires further study for its classification. The others were found to be antigenically related, but there was considerable variation in the neutralizing indexes.

JORDAN, F. T. W. (1958). **Some observations on infectious laryngotracheitis.**—*Vet. Rec.* **70,** 605-610. [Author's summary modified.] **101**

The symptoms, epidemiology, lesions and diagnosis of infectious laryngotracheitis in 11 outbreaks are described. The symptoms comprised coughing, sneezing, râles, gasping respiration, panophthalmia and nasal exudate. Expectoration of blood was not seen. Morbidity was high and mortality ranged from 0 to 50%. The disease affected birds varying in age from 5 weeks to 2 years, of a variety of breeds, and kept under all the usual types of management. The purchase or retention of survivor birds which were carriers was the commonest source of infection. Spread from pen to pen was often irregular and slow. The most constant lesions were caseous and mucous exudates in the trachea and bronchi. Blood clots in the trachea were only rarely found. The type of disease seen in these outbreaks cannot be readily distinguished from other respiratory diseases, including the respiratory form of Newcastle disease, except by the detection of the virus, the technique for which is described briefly. The best material for isolation of the virus is in swabs from the trachea and ocular discharge in living birds and from the trachea and lungs P.M. It is difficult to detect virus in birds which have shown symptoms for longer than a week. Possible methods of control are discussed.

HANSON, L. E. (1958). **Histological lesions in ducks with virus hepatitis.**—*Amer. J. vet. Res.* **19,** 712-718. [Author's summary modified.] **102**

Susceptible ducks were exposed orally and parenterally to virulent and chick embryo-modified duck hepatitis virus. The host reaction to the virus was studied in relation to microscopic tissue changes.

Lesions observed in the liver and brain were similar to those reported from cases of infectious hepatitis of man.

YANAGAWA, R., HIROTA, E. & KAWASHIMA, H. (1958). **On psittacosis in pet birds in Japan.** —*Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 34, pp. 56-63. [In English. Summary in Japanese p. 55. Abst. from English summary.] **103**

Mortality in an aviary was investigated in 1954. A virus isolated from dead birds was identified as one of the psittacosis-lymphogranuloma group. This is the first isolation of a virus of this group from birds in Japan.

BESSON, A. (1958). L'ornithose ou maladie par les pigeons. **[Pigeons as carriers of psittacosis.]**—*Bull. Acad. nat. Méd.* **142,** 81-85. **104**

B. discussed the occurrence of ornithosis (psittacosis) in pigeons and man, particularly with reference to France, and gave an account of the infection in pigeons. He considered that, particularly where large numbers of pigeons are

established in sites on buildings in large towns, measures should be taken to ensure that they are kept within limits. He stated that pigeons may be responsible for 6% of the cases of chronic mild bronchitis in human beings in large towns.

Some of those present at the meeting doubted if the risk to man was very considerable. It was resolved that the Académie de Médecine would support enquiry into the disease by a special committee.—W.A.P.

DICK, G. W. A. & DANE, D. S. (1958). **Budgerigars and poliomyelitis.**—*Lancet* March 15th, 585. **105**

A strain of type-1 poliovirus from a human case was used for budgerigar inoculation experiments. The paralysing dose $_{50}$ for rhesus monkeys was equivalent to $10^{2\cdot8}$ tissue culture doses$_{50}$ (T.C.D.$_{50}$) of virus; 3 budgerigars were inoculated intracerebrally with $10^{4\cdot5}$ T.C.D.$_{50}$ of virus, 4 orally with $10^{5\cdot3}$ T.C.D.$_{50}$ of virus and 3 were kept as cage contacts. None of the birds excreted detectable amounts of virus over a period of 19 days nor was antibody found in the serum of any bird on the 26th day. This suggests that natural infection of budgerigars is rare.—E.V.L.

PIERCE, C. H. & HIRSCH, J. G. (1958). **Ciliocytophthoria: relationship to viral respiratory infections of humans.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 489-492. [Authors' summary modified.] **106**

Sputum samples from patients with acute and chronic pulmonary diseases were examined cytologically by the Papanicolaou technique. Certain abnormalities in exfoliated ciliated epithelial cells (cilio-cytophthoria) were observed in a high proportion of individuals with respiratory infections due to viruses, and only rarely in sputum from patients with pulmonary disease not caused by a virus. Sputum cytology may prove valuable for differential diagnosis between the two types of respiratory infections.

DUNNE, H. W., LUEDKE, A. J. & HOKANSON, J. F. (1958). **The growth of animal leukocytes and their use in the cultivation of animal viruses.** — *Amer. J. vet. Res.* **19,** 706-711. [Authors' summary modified.] **107**

Leucocytes from cattle, pigs, and fowls were grown on glass surfaces in serum medium. The growing cell appeared to be the mononuclear leucocyte, which developed into a macrophage and then into a multinucleated giant cell, subsequently spreading into a large number of individual cells. Avian leucocytes developed extensive vacuolation during growth.

Viruses were shown to multiply in leucocytes through as many as 61 serial passages. Swine fever virus multiplied in pig leucocytes for more than ten weeks with 20 changes of medium before the cells deteriorated.

HERRMANN, E. C., JR. & ENGLE, C. (1958). **Tumor cell-induced mouse ascites fluid as a source of viral antibodies.** — *Proc. Soc. exp. Biol., N.Y.* **98,** 257-259. [Authors' summary modified.] **108**

In mice immunized by multiple i/p injections of either influenza A or Newcastle disease virus and thereafter inoculated with sarcoma-180, the amount of antibody formed in the ascitic fluid was comparable to that in blood plasma as measured by haemagglutination-inhibition test. The infectivity and interfering capacity of influenza viruses could also be neutralized by the specific immune ascitic fluid. It was possible to collect at least 10 times more ascitic fluid than heart blood.

MADIN, S. H. & DARBY, N. B. (1958). **Established kidney cell lines of normal adult bovine and ovine origin.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 574-576. [Authors' summary modified.] **109**

Two strains of cells capable of continuous culture, one from adult bovine kidney and one from adult ovine kidney, are discussed. It is suggested that they may be useful in the study of viruses and virus–host relationships.

ANDERSON, F. R., HOLLOWAY, B. W. & WHITE, D. O. (1958). **An economical dry ice box for virus storage.**—*Aust. J. Sci.* **21,** 21-22. **110**

The construction of a box which fits into a standard domestic deep-freeze unit, and which keeps virus stocks at −70°C., is described. It is heavily insulated with an insulation foam of plastic and cooled by dry ice (18 lb. dry ice a week).—A. G. CULEY.

EAST AFRICA HIGH COMMISSION. (1957). **East African Virus Research Institute report July 1956 – June 1957.** pp. 61. Nairobi: Government Printer. **111**

The mechanism of transmission and maintenance in nature of the "arbor" (arthropod-borne) viruses has continued to be the main interest of the Institute. Rabies appeared for the first recorded time in the Entebbe area and the Institute identified the virus, both by isolation and histological examination of tissues of infected animals. Later a technique was established which enabled diagnosis to be carried out in two and a half hours after receipt of the material, by means of histological study.

Amongst viruses investigated were:— Rift

Valley fever antibodies found in the blood of a wild rat, *Arvicanthus abyssinicus nubilans* in Uganda; Semliki Forest virus in mice; Zika virus collected from mosquitoes; yellow fever virus and yellow fever neutralization test methods. Fundamentally, the method used for the last named was as that described the previous year but with modifications.

Other studies were virological studies in birds, studies in the body temperatures of rhesus monkeys, entomological studies and further development of a trap to estimate the biting insect attack on small vertebrates.

—D. S. RABAGLIATI.

ŠIPKA, M. (1958). *Coxiella burneti* u belom mekom siru. [**Survival of *Rickettsia burneti* in cheese.**]—*Vet. Glasn.* **12**, 9-12. [In Croat. Summary in German.] **112**

Cow's milk infected with *Rickettsia burneti* which in dilutions of 1 : 100 was still pathogenic for g.pigs, was used for the preparation of a cottage-type cheese, which retained its infectivity for g.pigs for a period of observation of 42 days. Survival of *R. burneti* in milk and cheese was demonstrated by complement fixation with g.pig blood. Pasteurization of milk for the manufacture of dairy products was advocated.—E.G.

See also absts. **5-7** (avian hepatitis); **288** (report, Federation of Rhodesia and Nyasaland); **289** (report, North Borneo); **290** (report, Bahamas); **291** (report, Uganda); **293** (textbook, microbiology); **295** (advances in veterinary science).

IMMUNITY

STANKOVIĆ, V. & KRVAVICA, S. (1958). Utjecaj hiperimunizacije i vadenja krvi na koncentraciju slobodnog histidina u krvi konja. [**Influence of hyperimmunization and bleeding on concentration of free histidine in the blood of horses.**] — *Veterinaria, Sarajevo* **6**, 624-626. [In Croat. Summary in English.] **113**

Free histidine values in the blood of healthy horses varied from 1·84–4·05 mg.% (average 2·56 mg.%), in tetanus serum-producing horses 0·87–2·06 mg.% (average 1·35 mg.%), and in horses used for the production of normal serum 1·13–2·21 mg.% (average 1·62 mg.%). The low histidine level in serum horses was attributed to utilization of the amino-acid in haemoglobin synthesis.—E.G.

EVANS, J. V. & PHILLIPSON, A. T. (1958). **Heritable characters of the red blood cells of sheep.**]—*N. Z. vet. J.* **6**, 12-14. **114**

Determinations of the potassium in the blood of Blackface sheep revealed that there are two types: one with a conc. of 30–40 m. equiv./litre (HK) and the other with a conc. of 8–16 m. equiv./litre (LK); these differences resided in the r.b.c. This phenomenon was observed about the same time and independently by Widdas (1954) in Welsh mountain sheep. It is considered that the K conc. of the r.b.c. of sheep is a characteristic of the animal, independent of external circumstances. Na conc. varies inversely with K conc. but it is more labile, so that typing of sheep by this measurement alone is not satisfactory. It was observed that the LK character is a simple Mendelian dominant—LK animals being either homo- or heterozygous and HK animals being homozygous. Results of surveys of the K conc. and Hb types in a number of British, subarctic, Middle East and African breeds are discussed.—T.E.G.R.

ASHTON, G. C. (1958). **Genetics of beta-globulin polymorphism in British cattle.**—*Nature, Lond.* **182**, 370-372. **115**

Six serum β-globulin phenotypes of cattle have now been identified and it is possible to propose a genetic mechanism for the system. The mating data and symmetrical appearance of the phenotypes suggested that a three-allele system (genes β^A, β^D and β^E) with no dominance is operative; each phenotype is a single genotype and it is appropriate to designate them $\beta^A/\beta^A : \beta^A/\beta^D : \beta^D/\beta^E : \beta^D/\beta^D : \beta^A/\beta^E : \beta^E/\beta^E$.

With the advent of artificial insemination reliable gene frequency data could be established representative for each breed of cattle in Gt. Britain. It was evident that the frequency of β^E is greater in those breeds originating in the climatically more severe parts of the British Isles and the data suggested that β-globulin polymorphism in cattle may be concerned with climatic tolerance. Recently described β-globulin polymorphism in human beings sharply distinguishes the black and white races and polymorphism involving the β-globulins has also been found in sheep, goats, horses and rhesus monkeys. This may therefore prove to be one mechanism by which a species is able to adapt itself to both temperate and tropical climates.

—E.V.L.

ROSENBERG, L. T., CHANDLER, M. H. & FISCHEL, E. E. (1958). **Passive cutaneous anaphylaxis with antigen-antibody complexes and additional antigen.** — *Proc. Soc. exp.*

Biol., N.Y. **98,** 451-453. [Authors' summary modified.] **116**

Small amounts of antibody and excess antigen sensitize the skin of g.pigs so that challenge by i/v injection of antigen and dye elicits passive cutaneous anaphylaxis. The significance of the biological reactivity of antigen–antibody complexes is briefly discussed.

See also absts. **15** (parasitic allergy and the tuberculin test); **19-21** (Johne's disease); **23-24** (haemorrhagic septicaemia); **32** (salmonellosis); **34 & 36** (brucellosis); **41** (leptospirosis); **50** (fungal antibodies); **52** (bovine contagious pleuropneumonia vaccine); **55** (dourine); **59** (trichomoniasis); **71** (vesicular stomatitis); **74-79** (rabies); **82** (rinderpest agar diffusion precipitation test); **85-89** (swine fever); **91** (Teschen disease agar diffusion precipitation); **100** (antigenic differences in avian infectious bronchitis virus isolates); **162** (avian erythroblastosis).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

SCHOOF, H. F. & KILPATRICK, J. W. (1958). **Organic phosphorus compounds for the control of resistant house flies in dairy barns.**—*J. econ. Ent.* **51,** 20-23. [Authors' summary modified.] **117**

Residual applications of diazinon to dairy barns at the rate of 100 mg./sq. ft. alone or with sugar (250 mg./sq. ft.) controlled house-flies for 6–8 weeks. At the rate of 20 mg./sq. ft., diazinon without sugar failed to control, but with sugar (50 mg./sq. ft.) it was effective for 4 weeks. An aq. soln. of Dipterex (dimethyl-1-hydroxy-2,2,2-trichloroethylphosphonate) applied at the rate of 100 mg./sq. ft. gave 3 weeks of control compared with 8 weeks for a Dipterex:sugar formulation (100:250 mg./sq. ft.). Parathion:D.D.T. emulsion formulations at the rate of 10:200 mg./sq. ft. gave control ranging from 1 to 7 weeks. A parathion:sugar emulsion at the rate of 10:250 mg./sq. ft. controlled flies for only 1 week. A single test with an EPN:DDT suspension at the rate of 25:200 mg./sq. ft. gave excellent control for the entire 13-week evaluation period. (EPN is *O*-ethyl *O*-*p*-nitrophenyl benzenethiophosphonate.) Dow ET-15 emulsion applied late in the season at the rate of 200 mg./sq. ft. gave excellent control for a 9-week evaluation period.

KNAPP, F. W., TERHAAR, C. J. & ROAN, C. C. (1958). **Dow ET-57 as a fly larvicide.**—*J. econ. Ent.* **51,** 361-362. **118**

The authors compared the larvicidal efficiency of Dow ET-57 and malathion against house-flies and other flies developing in droppings under caged laying hens. 1·25% concentrations of the insecticides were sprayed on to the droppings once a fortnight for 2 months. Dow ET-57 gave an overall control of 78 to 99% at the end of the first and second week, respectively, while malathion gave a corresponding 0 to 67% control.—R.M.

WILEY, A. J. (1958). **Distribution of the common brown tick in Kenya.**—*E. Afr. agric. J.* **24,** 53-56. [Author's summary modified.] **119**

The common brown tick (*Rhipicephalus appendiculatus*) as a carrier of disease is discussed, with special reference to East Coast fever. The effects of climate and altitude upon its distribution are summarized.

Generally speaking the tick occurs throughout western Kenya, is common in those parts of the highlands below about 7,500 ft., especially where cultivation predominates and where dipping is not carried out. There are numerous "pockets" of *R. appendiculatus* in the southern parts of the coastal belt. The high plateau, the plains, the deserts and the dry bush areas are usually free from this tick.

GREGSON, J. D. (1957). **Experiments on oral secretion of the Rocky Mountain wood tick, *Dermacentor andersoni* Stiles (Acarina: Ixodidae).**—*Canad. Ent.* **89,** 1-5. [Abst. from abst. in *Rev. appl. Ent. Ser. B.* **46,** 104-105. (1958).] **120**

G. suggested that tick paralysis is caused by the fluid secreted from the mouth of the tick, since it usually appears only after a tick has been engorging for four days or more, individual ticks seem to vary in their ability to produce it, it can apparently be produced by either slow- or fast-feeding ticks, and it disappears when the feeding tick is removed and occasionally even when it is still attached but is near repletion. Attempts to produce paralysis by injecting the fluid into lambs, mice, a dog, a frog, and frog nerve–muscle preparations were, however, unsuccessful.

MOREL, P. C. (1958). Les tiques des animaux domestiques de l'Afrique Occidentale Française. **[The ticks of domestic animals in French West Africa.]** — *Rev. Élev.* **11,** 153-189. [Summaries in English and Spanish. English summary modified.] **121**

M. presented the results of surveys during the last two years in French West Africa, on the geographical distribution of ticks. He states that this information is not yet complete. In the Order Ixodidae the genera *Amblyomma, Boophilus, Haemaphysalis, Hyalomma, Rhipiceph-*

alus, Ixodes, and in the Order Argasidae, the genera *Argas* and *Ornithodoros* are covered. Wherever possible he gives details on the larval stages, biology, the requirements in humidity, the distribution and hosts. He studied the distribution of ticks according to their climatic requirements, considering these to be different for genera, species, sub-species, and probably even strains.

FROST, R. C. & BERESFORD-JONES, W. P. (1958). **Otodectic mange in the dog.**—*Vet. Rec.* **70,** 740-742. [Authors' summary modified.] **122**

Examination of otitis externa in 100 dogs showed that in 36 it was due to *Otodectes cynotis* infestation. Data on age, sex, and breed incidence are given. The effects of temperature on the occurrence of the mites and possible sources of contagion are also noted.

See also abst. 287 (report, Western Australia).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

EHRLICH, I. & WINTERHALTER, M. (1958). O ulozi terapije kloriranim ugljikovodicima u planskom suzbijanju fascioloze. **[Chlorinated hydrocarbons in the treatment of fascioliasis.]** —*Vet. Glasn.* **12,** 266-268. [In Croat. Summary in German.] **123**

In cattle hexachloroethane produced chronic lesions in the liver, or acute diffuse nephrosis, or digestive disorders which inhibited absorption of the anthelmintic. Consequently fascioliasis was cured in only about 47% of those treated. Better results were obtained with carbon tetrachloride, applied subcutaneously, in sheep. Young flukes in the liver parenchyma and immature forms in the bile ducts are not affected and treatment should therefore be repeated after 3 months.

—E.G.

ERMOLOVA, E. N. (1958). **[Eradication of coenurosis from sheep farms in South Kazakhstan.]**—*Veterinariya, Moscow* **35,** No. 5 pp. 58-60. [In Russian.] **124**

A campaign to eliminate *Coenurus* from a farm containing 64,000 sheep began in 1953, when 20% of the total number of deaths were due to this parasite. The measures comprised isolation and surgical treatment of affected sheep, burning of infested carcasses, and registration and annual treatment of dogs with 3 mg. of arecoline per kg. body wt., to destroy tapeworms. Mortality in sheep due to *Coenurus* fell from 4% in 1953 to less than 1% in 1956. Complete eradication is expected in a few years, as all farms in the area have now entered the campaign.—M.G.G.

SAWADA, I. (1957). *Raillietina* (*Raillietina*) *peradenica* **n. sp. from a Ceylon domestic fowl,** *Gallus gallus domesticus.*—*Jap. J. med. Sci. Biol.* **10,** 243-246. **125**

A brief note on a new species of *Raillietina* as named in the title from a domestic fowl in Ceylon, the specific name referring to the town from which the material was sent. There is no mention of the relation of the parasite to the health of the host.—W.A.P.

TURNER, J. H. & SHALKOP, W. T. (1958). **Larval migration and accompanying pathological changes in experimental ovine strongyloidiasis.** — *J. Parasit.* **44,** No. 4 Sect. 2 p. 28. [Authors' abst. modified.] **126**

Larvae were present in the skin from 15 mins. to 48 hours after infection, but little damage to cutaneous tissue, except for slight haemorrhage and oedema, was observed. More larvae were present in the blood at 12 and 24 hours than later, and they were more numerous in venous than in arterial blood. Larvae were not recovered from the circulating blood later than 72 hours after infection. Larvae were recovered from the lungs and musculature as early as 12 hours after infection, but were not detected in the gastro-intestinal tract until about 3½ days later. Gross lung damage was first observed 2 days after infection and reached its maximum about 3 days later. At this time the lung surfaces were covered with petechiae and ecchymoses. Histopathological changes of the lungs included acute hyperaemia along with interstitial extravasation of blood, and oedema. Damage to the intestine in the form of a severe catarrhal enteritis was generally confined to the duodenum and jejunum.

WINTER, H. (1958). **Gastric strongyloidosis in kangaroos.**—*Aust. vet. J.* **34,** 118-120. **127**

During a wet summer season many pet kangaroos died from gastric strongyloidosis. The animals scoured, were listless and had a varying appetite. P.M., one of the main lesions was a catarrhal-mucoid gastro-enteritis. Numerous nematodes of a hitherto undescribed species of *Strongyloides* were recovered from that part of the stomach corresponding in its histological appearance to the pyloric region in domestic animals. The lungs were hyperaemic, oedematous and petechiae were numerous.

—R. I. SOMMERVILLE.

LELAND, S. E., JR., DRUDGE, J. H. & WYANT, Z. N. (1958). **Blood and plasma volume, total serum protein, and electrophoretic serum fractionation of calves experimentally infected with *Trichostrongylus axei*.** — *J. Parasit.* **44,** No. 4 Sect. 2 pp. 27-28. [Authors' abst. modified.] **128**

Sixteen calves (14 Jerseys and 2 Holsteins) 3 to 5 months old were studied for 4 months after infection with single doses of 5,000 to 1,500,000 larvae.

The most consistent and prominent serum protein changes were an extensive and prolonged hypoproteinaemia and a hypoalbuminaemia with an increase or maintenance of alpha-2 globulin and in general a decrease of the other globulins.

The sequence of events with regard to blood and plasma volumes in infected animals appears to be a development of polycythaemic hypovolaemia which, if the animal survives, becomes oligocythaemic.

ROHRBACHER, G. H., JR., PORTER, D. A. & HERLICH, H. (1958). **The effect of milk in the diet of calves and rabbits upon the development of trichostrongylid nematodes.** — *Amer. J. vet. Res.* **19,** 625-631. **129**

A detailed account of work previously published in brief [*V.B.* **28,** 3635]—R.M.

LYNCH, J. E. & NELSON, B. V. (1958). **Compound 1871. A new anthelmintic. I. Preliminary studies on the therapeutic activity against *Nematospiroides dubius*.**—*J. Parasit.* **44,** No. 4 Sect. 2 p. 38. [Authors' abst. modified.] **130**

Some of the intestinal parasitic species that do most harm to farm animals belong to the family Trichostrongylidae. Barker (1954) has shown that the pathogenesis of *Nematospiroides dubius,* a trichostrongylid of mice, can be compared in certain aspects with other members of this family.

Established anthelmintics are relatively ineffective against *N. dubius* in that large multiple doses are required to produce measurable activity against an inoculum of 40 larvae/mouse.

"Compound 1871" [composition not stated] was very active against *N. dubius* in doses as low as 12·5 mg./kg. The size of the inoculum does not influence appreciably the activity of compound 1871.

SEGHETTI, L. & SENGER, C. M. (1958). **Experimental infections in lambs with *Nematodirus spathiger*.**—*Amer. J. vet. Res.* **19,** 642-644. [Authors' summary modified.] **131**

Third-stage infective larvae of *N. spathiger* were given orally to lambs in a series of six experiments. Some of the lambs, up to the age of 3 months, died after being given either a single dose of 80,000 or more infective larvae, or a somewhat larger number over two to four weeks. Lambs older than 3 months showed only a transient diarrhoea after exposure. Diarrhoea preceded ova production by up to three days. Failure to gain weight normally varied from slight in lambs with mild infections to severe in those which died from the parasitism.

ALLEN, R. W., SCHAD, G. A. & SAMSON, K. S. (1958). **Experimental cross-transmission of two strains of *Haemonchus* from wild ruminants to domestic sheep, with observations on their pathogenicity as compared with *Haemonchus* from domestic sheep.** — *J. Parasit.* **44,** No. 4 Sect. 2 p. 26. [Authors' abst. modified.] **132**

During 2 consecutive years faecal samples containing worm eggs were collected from wild Bighorn sheep (*Ovis canadensis*) and Barbary sheep (*O. tragelaphus*), and were cultured by standard methods. The larvae from each host were administered to separate parasite-free domestic lambs. Infective larvae cultured from eggs obtained from *Haemonchus* females recovered P.M. from these lambs served as the source of the experimental infections.

Lambs receiving the strains of *Haemonchus* from the wild ruminants gained significantly more weight and maintained significantly higher haemoglobin levels than the lambs receiving the domestic strain. Counts of worm eggs in faeces and average numbers of worms recovered P.M. from the lambs in the various groups supported the clinical data.

MAYHEW, R. L., TORBERT, B. G. & MILLER, G. C. (1958). **Immunity to *Cooperia punctata* in pure infections in cattle.**—*J. Parasit.* **44,** No. 4 Sect. 2 pp. 40-41. [Authors' abst. modified.] **133**

In total, 25 animals that have been inoculated with pure cultures of larvae have shown immunity to *Cooperia punctata*. This immunity is shown in some animals by a very low egg count as a result of the initial inoculation while in others a high egg count will result and be maintained for a time. Egg counts may drop suddenly to zero or to a very low number and remain low for several days; then they may increase somewhat. Following a second sudden drop the count remains low usually but may increase and in turn be followed by a third drop after which it remains low. Following re-inoculation a slight increase in egg count may result or

the animal may become completely negative. Immunity to *C. punctata* does not give protection against the nodular worm (*Oesophagostomum radiatum*).

GIBSON, T. E. (1958). **The role of the egg as the infective stage of the nematodes *Nematodirus battus* and *Nematodirus filicollis*.**—*Vet. Rec.* **70,** 496-497. [Author's summary.] **134**

Experimental evidence is recorded showing that "embryonated" eggs of *N. battus* are capable of setting up infestations in lambs but are much less efficient in this respect than free infective larvae. With *N. filicollis* it was not found possible to set up infestations using "embryonated" eggs but free infective larvae did so without difficulty.

CIORDIA, H. & BIZZELL, W. E. (1958). **Relation of *Escherichia coli* to the development of the preparasitic stages of various cattle nematodes.**—*J. Parasit.* **44,** No. 4 Sect. 2 p. 25. [Authors' abst. modified.] **135**

Escherichia coli tagged with radiophosphorus was incorporated with faecal cultures containing eggs of *Cooperia oncophora, Ostertagia ostertagi,* and *Trichostrongylus axei.* The resulting infective larvae from such cultures did not exhibit any radioactivity, although it was expected that the pre-infective stages would feed on the bacteria. The number of infective larvae was reduced when bacteria were added to cultures prepared with faeces freshly voided by infected cattle (40% development), or when added to cultures made with sterilized faeces (25% development), as compared with control cultures without *E. coli.* Infective larvae were never recovered from cultures containing bacteria-free eggs sterile moss, sterile aqueous extract of faeces, and *E. coli.* Further work is in progress in an attempt to determine the nutritive requirements of the pre-infective stages of these cattle nematodes.

DRUDGE, J. H., LELAND, S. E., JR., WYANT, Z. N. & RUST, J. W. (1958). **Winter survival of some cattle parasites on a Kentucky pasture with observations on the effects of low-level phenothiazine treatment.**—*J. Parasit.* **44,** 434-438. [Authors' summary modified.] **136**

Observations over 4 winters indicated the survival of the free-living stages of *Ostertagia ostertagi, Nematodirus helvetianus, Cooperia oncophora, C. punctata, Trichuris* sp., and *Moniezia* sp. on blue-grass pasture in central Kentucky. There was no evidence that *Haemonchus* sp. and *Oesophagostomum radiatum* overwintered on pasture. Low-level phenothiazine medication of successive groups of heifers on a pasture during the intervening summer grazing seasons showed a species-selective action on the nematodes. Of the 3 predominant species, *O. ostertagi* and *C. oncophora* were effectively controlled, but the development and survival of *N. helvetianus* were favoured. These effects of treatment were reflected in the numbers of each of these species that survived the succeeding winter intervals on the treated pasture in comparison with the control.

LEVINE, N. D., BRADLEY, R. E. & MACK, R. M. (1958). **The relation of two weekly pasture rotation systems to the acquisition of gastro-intestinal nematodes by sheep.** — *J. Parasit.* **44,** No. 4 Sect. 2 pp. 25-26. [Authors' abst. modified.] **137**

The authors studied the effect of weekly pasture rotation on the acquisition of gastro-intestinal nematodes by lambs grazing with their ewes, and also whether the lambs could be successfully grazed separately from their ewes. One group (Group A) of 10 lambs was separated from their ewes and placed on a ¼-acre brome grass–lucerne pasture. After a week they were moved to a second pasture of the same size, and their 8 ewes were placed on the pasture they had vacated. They were rotated in this way 6 times. Eight lambs and 6 ewes in Group B were kept as unrotated controls on a 1½-acre pasture. Ten lambs and 8 ewes in Group C were rotated together at weekly intervals through a series of six ¼-acre pastures; these served as unseparated controls.

It was concluded that none of these grazing systems was effective in preventing a high degree of parasitism or in producing satisfactory weight gains.

KINGSBURY, P. A. (1958). **The effect of particle size on the anthelmintic properties of phenothiazine in sheep.** — *Vet. Rec.* **70,** 523-528. [Author's summary modified.] **138**

Phenothiazine preparations containing 74 to 88% of particles by weight, with an equivalent diameter of less than 10 μ, were administered to 72 sheep and the results compared with those for coarser material. At dose rates of 500 to 830 mg. per kg. the fine preparations were 70 to 85% effective against *Trichostrongylus colubriformis* and *T. vitrinus* whilst one containing 25% of particles less than 10 μ was only 4 to 27% effective against *T. colubriformis* at 500 to 777 mg. per kg. At similar dose rates the fine phenothiazine had an anthelmintic efficiency of 80% against *Ostertagia* spp. in wormy lambs but failed to have any effect at 1,000 mg. per kg.

against 28-day-old artificially established infections of this genus in previously wormfree animals. The fine phenothiazines were highly efficient against *Haemonchus contortus* at a dose rate of 100 to 200 mg. per kg. whilst at about 700 mg. per kg. they showed much the same type of efficiency against *T. axei, Cooperia curticei* and *Nematodirus* spp. that is shown by commercial phenothiazines. No anthelmintic effect was apparent against *Strongyloides papillosus, Dictyocaulus filaria* or *Trichuris ovis* at dose rates up to 1,000 mg. per kg.

No evidence of toxicity was seen. Attention is drawn to the difficulties inherent in comparisons of particle size estimated by various methods and also to possible differences between experimental formulations of phenothiazine ostensibly of the same type.

LEVINE, N. D., KANTOR, S. & TAYLOR, G. D. (1958). **Trials of organic phosphorus nematocides in sheep and mice.**—*Illinois Vet.* **1,** 6-9. [Authors' summary modified.] **139**

400 mg./kg. body wt. of O, O-dimethyl 2,2,2-trichloro 1-hydroxyethylphosphonate (Dipterex) eliminated most of the gastro-intestinal nematodes from a sheep, but caused temporary neuromotor symptoms. In doses of 100–200 mg. per kg. it produced no symptoms, but was ineffective or only partially effective against the worms. O(2,2-dichlorovinyl)-O,O-dimethyl phosphate (DDVP) had no effect on the parasites at a dose of 25 mg./kg. and only a slight effect at 50 mg./kg.; these doses did not appear to harm the sheep. O,O-diethyl 4-oxopenten-1-yl phosphonate (Shell OS 1808) killed two sheep given 25 and 40 mg./kg., respectively; it had no apparent effect either on a sheep or its parasites at a dose of 10 mg./kg. O,O,O-tri-*n*-propyl phosphorotrithioite killed a sheep given 400 mg. per kg., but had no apparent effect on its nematodes. The acute oral LD_{50} for mice of 11 organic phosphorus compounds was determined.

JARRETT, W. F. H., MCINTYRE, W. I. M., JENNINGS, F. W. & MULLIGAN, W. (1957). **The natural history of parasitic bronchitis with notes on prophylaxis and treatment.** — *Vet. Rec.* **69,** 1329-1336. Discussion: pp. 1336-1340. **140**

This paper consists largely of a review of work carried out at the Glasgow Veterinary School and reported in greater detail elsewhere [*V.B.* **25,** 713; **26,** 1324 & 2340; **27,** 555 & 1824]. The general literature is not reviewed.

In the discussion the authors reported the results of immunizing calves by oral dosing with irradiated *Dictyocaulus viviparus* larvae whereby the migration of these larvae was prevented from proceeding beyond the mesenteric lymph nodes. Such calves were resistant to subsequent challenge with normal infective larvae. Results of a small-scale field trial have subsequently been published [see next abst.].

—H. S. MCTAGGART.

JARRETT, W. F. H., JENNINGS, F. W., MARTIN, B., MCINTYRE, W. I. M., MULLIGAN, W., SHARP, N. C. C. & URQUHART, G. M. (1958). **A field trial of a parasitic bronchitis vaccine.** —*Vet. Rec.* **70,** 451-453 & 454. [Authors' summary modified.] **141**

A small-scale field trial in calves of a vaccine against parasitic bronchitis is described. The vaccine was made by attenuating infective *Dictyocaulus viviparus* larvae by X-irradiation. A high degree of protection was conferred as judged by clinical and pathological findings, mortality, morbidity, faecal larval counts, and worm burdens. The application of this vaccine in the field is discussed.

BROWN, T. H. & SPEDDING, C. R. W. (1958). **A study of husk in calves.**—*Brit. vet. J.* **114,** 296-307. [Authors' summary modified.] **142**

The effect of husk on the live weight gain of grazing calves was studied. Two of the eight which became infected did not recover. The remained had a significant reduction in rate of live weight gain. Of the six which recovered, those which had an *early* depression of live weight gain were the least retarded over the whole experimental period (14 months).

MICHEL, J. F. & COATES, G. H. D. (1958). **An experimental outbreak of husk among previously parasitised cattle.**—*Vet. Rec.* **70,** 554-556. [Authors' summary.] **143**

A group of young cattle were exposed to lungworm infection on pasture and subsequently withheld from infection. In the following year they were again exposed to infection on pasture together with a group of cattle of the same age which had been housed since birth. The resulting symptoms of husk were of equal severity in the two groups but lungworm larvae appeared only in the faeces of the cattle of the group which was exposed to infection for the first time.

SOROKIN, A. N., ANDRYUSHCHENKO, V. V. & MEREMINSKII, A. I. (1958). [**Influence of rearing calves in pens on the incidence of** *Dictyocaulus* **infestation.**] — *Veterinariya, Moscow* **35,** No. 5 pp. 57-58. [In Russian.] **144**

Calves were reared from the age of 2–3 weeks in pens, in fine weather being allowed

into yards, but never on to pasture grazed by older cattle. They remained free from *Dictyocaulus* infestation. In one district, as more farms began to apply the method, the incidence of the infestation in calves fell from 27% in 1954 to 2% in 1957.—M.G.G.

O'Donoghue, J. G. (1958). **Clinical trials with cyanacethydrazide for the treatment of lungworms in cattle and sheep.**—*Canad. J. comp. Med.* **22,** 237-239. **145**

Lungworm infestation in cattle and sheep has been a serious problem on individual premises in Alberta for many years and the reported effective use of cyanacethydrazide in such outbreaks was studied with clinical trials.

Subcutaneous or oral administration in calves proved strikingly satisfactory with early appearance of increased appetite and the total disappearance of cough.

Results were somewhat similar in sheep and lambs, being most remarkable in severely affected animals.

Limited experimental studies indicated results similar to other published data. Moreover the presence of larvae in the droppings on the third day following administration to a suspect ewe with a negative faecal examination suggested that the drug might be a valuable diagnostic aid.—R. V. L. Walker.

Kelley, G. W. Jr., Olsen, L. S., Sumption, L. & Adams, J. C. (1958). **Field evaluation of hygromycin B as an ascaricide in swine.**—*Vet. Med.* **53,** 120-126. **146**

Experiments were carried out on 8 groups of infested pigs on concrete and 8 groups at pasture. In each case one group was left untreated, as control, and the rest were treated with: hygromycin B; hygromycin B combined with chlortetracycline; hygromycin B and "Parvex" (piperazine carbodithioic betaine); chlortetracycline; chlortetracycline and Parvex; Parvex alone; Parvex and hygromycin B and chlortetracycline. Efficacy of treatment, based on ascaris egg count, was in the following descending order: hygromycin B (egg count almost *nil*), Parvex, chlortetracycline. Hygromycin B, fed at the rate of 12 million units/ton for 60 days, caused elimination of ascaris. Under pasture conditions it caused an increased gain in weight of 13 lb. a pig. Parvex effectively removed adult ascarids though some immature worms were apparently retained by young pigs on first treatment. Hygromycin B and chlortetracycline in combination were compatible and produced greater weight gains than when administered singly.—T.E.G.R.

Webster, G. A. (1958). **A report on** *Toxocara canis* Werner, 1782.—*Canad. J. comp. Med.* **22,** 272-279. **147**

The life history of *Toxocara canis* is discussed, emphasis being placed on the migration, pathological changes in the liver and lungs of the host, and prenatal infection. As *Toxocara* is one of the aetiological agents of human visceral larva migrans, the relationship between *T. canis* and this syndrome is noted.—R. V. L. Walker.

Sprent, J. F. A. & English, P. B. (1958). **The large roundworms of dogs and cats—a public health problem.**—*Aust. vet. J.* **34,** 161-171. **148**

Migrating second stage larvae of ascaridoid nematodes of dogs and cats give rise to the condition known as "visceral larva migrans" in man. This association with man arises from the ingestion of ova which are initially deposited in the faeces of puppies, and the authors regard the association as normal in the life history of these nematodes, with man playing the role of a transport or intermediate host. This review cannot be abstracted adequately in a limited space. It traces the history of the occurrence of visceral larva migrans in children, and discusses the aetiology, life histories of the nematodes concerned, pathogenesis, diagnosis, prevention, and the treatment of dogs and cats to remove the nematodes.—R. I. Sommerville.

Northam, J. I. & Rocha, U. F. (1958). **On the statistical analysis of worm counts in chickens.** — *Exp. Parasit.* **7,** 428-438. [Authors' summary.] **149**

Some distributions of *A. galli* in experimentally infected chickens are shown to be well approximated by the negative binomial law. This fact suggests certain statistical procedures which, when applied to an experiment involving phenothiazine, yields results which are not obtained in as clearcut a fashion by other inappropriate methods.

Kantor, S., Bliznick, A. & Kennett, R. L. Jr. (1958). **The anthelmintic activity of piperazine dihydrochloride monohydrate in the chicken's diet against** *Ascaridia galli* **larvae.**—*J. Parasit.* **44,** No. 4 Sect.2 p.39. [Authors' abst. modified.] **150**

Piperazine dihydrochloride monohydrate, containing 51% of piperazine base, reduces the number of young larval *Ascaridia* in fowls when given at relatively high levels in the feed. There was an approx. 90% reduction in the numbers of larvae compared with the untreated controls when concentrations of 0·26% and 0·13% pipera-

zine base were fed for 1 to 2 weeks beginning on the day of infection. Though 0·06% reduced larval numbers by 70% when fed for 14 days from the day of infection, this level was ineffective when fed for 9 or 10 days.

With only one day's treatment of 10-day-old larvae, much higher concentrations were less effective, since medicated diets of 1·53%, 1·02% and 0·8% piperazine base removed respectively 81%, 37% and 48% of the larvae.

MALEK, E. A. (1958). **Life cycle studies on the nematode *Subulura brumpti* (Lopez-Neyra, 1922) Cram, 1926, and its distribution in the Sudan.**—*J. Parasit.* **44,** No. 4 Sect. 2 p. 31. [Author's abst. modified.] **151**

The life cycle of the nematode was followed by force-feeding grasshoppers on entire female worms. When chicks were fed on the infective encapsulated larvae, sexually mature males and females were recovered from the caeca 5 to 6 weeks later.

The life cycle was compared to that of *Heterakis gallinae*. The distribution of both caecal worms in the Republic of the Sudan, and also in Egypt, is evidently governed by ecological and geographical conditions. In the arid northern and central Sudan only *Subulura* occurs. In the southern part of the country, with high humidity and rainfall, both *Subulura* and *Heterakis* are found (in Malakal and neighbourhood) and *Heterakis* becomes commoner further south, in Equatoria Province. In Egypt *Heterakis* is predominant in the Delta, with high humidity due to irrigation, while in arid Upper Egypt *Subulura* predominates, and further south, near the Sudan border, it is believed to be the only caecal nematode of poultry. Extension of agriculture under irrigation in the northern and central Sudan may spread *Heterakis*.

BAILEY, R. W. (1958). **A comparison study of various arsenical preparations as filaricides of *Dirofilaria immitis*.**—*J. Amer. vet. med. Ass.* **133,** 52-55. [Author's summary modified.] **152**

Oxophenarsine hydrochloride (Mapharsen), arsenamide (No. 1) (Caparsolate), arsenamide (No. 2) (Filcide), and dichlorophenarsine hydrochloride (Filarsen) were tested on dogs with *Dirofilaria immitis*. The drugs were given i/v at the rate of 0·75 mg. of As per kg. daily for 3 days in one group of 40 and for 2 days in a second group of 40. In both groups all of the drugs tested appeared to be equally effective in destroying adult *D. immitis* (over 95% in 21 days) and there was little evidence of toxicity.

KUME, S. (1958). **Prophylactic therapy against the developing stages of *Dirofilaria immitis* before reaching the canine heart.**—*Amer. J. vet. Res.* **19,** 675-676. [Author's summary modified.] **153**

Antimony (as sodium antimonyl pyrogallol sulphonate), in twice the microfilaricidal dose, was shown to prevent the development of *D. immitis* in experimentally infected dogs. It is suggested that both diethylcarbamazine and the arsenicals be similarly tested against immature worms.

MORINI, E. G. (1958). Parasitismo por acantocefalos en un lanar. [***Macracanthorhynchus hirudinaceus* infection in a lamb.**]—*Rev. Med. vet., B. Aires* **38,** 175-176. [Summary in English.] **154**

A report of what is believed to be the first recorded instance of *M. hirudinaceus* infection in this host. The parasites (4 females and 2 males) were found in the small intestine in the course of meat inspection.—F.E.W.

VUJIĆ, B. & ANIĆ, N. (1958). Prilog upoznavanju nekih šteta od subkliničkih parazitoza ovaca. [**Subclinical parasitic infestations in sheep.**]—*Vet. Glasn.* **12,** 604-608. [In Croat. Summary in English.] **155**

One group of sheep, treated against fascioliasis and trichostrongylosis with s/c doses of 5 ml. of carbon tetrachloride, oral doses of 20 ml. of hexachloroethane and 20 g. of phenothiazine, gained over a period of 35 days an average of 0·4 kg., another group treated with 5 ml. of carbon tetrachloride, 25 ml. of hexachloroethane and 25 g. of phenothiazine gained 1·5 kg. after 30 days, and a third group given 15 g. of phenothiazine against trichostrongylosis gained 1·03 kg. over a period of 47 days, as compared with untreated controls. After 132 days differences in weight gains between treated and untreated sheep disappeared owing to re-infection.—E.G.

MIKLAUŠIĆ, B. & ŽUKOVIĆ, M. (1958). Parasitske invazije u ekvida na Braču. [**Parasitic diseases in horses, donkeys and mules on the island of Brač.**]—*Vet. Glasn.* **12,** 84-87. [In Croat. Summary in English.] **156**

Of 950 brood mares, 150 geldings, 200 foals, 1000 mules and 900 donkeys on the island of Brač, a mule-breeding centre a few miles off the Dalmatian coast, 369 mares, 88 geldings, 40 foals, 359 mules and 174 donkeys were examined parasitologically. All were infested with *Gastero-*

philus larvae. All faecal samples contained *Strongylus* ova and 11·5% *Ascaris* ova, particularly those from young animals. Infestation with *Oxyuris equi, Parafilaria multipapillosa, Rhipicephalus bursa* and *Hyalomma marginatum* was frequently seen and incidence of *Hippobosca equina* and *Stomoxys calcitrans* was high. —E.G.

See also absts. **15** (parasitic allergy and the tuberculin test); **289** (report, North Borneo); **291** (report, Uganda).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

KERSTING, G. & HAMMERSEN, F. (1958). Ein Teratom der Chiasmagegend beim Kaninchen. **[A teratoma in the region of the optic chiasma in a rabbit.]**—*Zbl. VetMed.* **5,** 601-608. [Summaries in English, French and Spanish. English summary modified.] **157**

This is a report of a teratoma with tissues derived from all three germ layers and situated in the medio-basal region of the frontal lobe. Apart from the extreme rarity of such tumours in animals, the case assumes particular importance because the tumour showed areas of recent focal necrosis which may have been due to inoculation with the virus of Western equine encephalomyelitis. The rabbit was being used to produce hyperimmune serum against the virus.

ANON. (1958). **Oestrogens and breast cancer.** —*Brit. med. J.* May 10th, 1115. **158**

An annotation. It is generally accepted that the beneficial effects of oophorectomy and of adrenalectomy in the treatment of patients with metastasizing carcinoma of the breast are primarily due to the removal of the ovarian and adrenal oestrogens. About 50% of the patients, those with so-called hormone dependent tumours, receive benefit.

In a recent report in the U.S.A. on patients all at about the menopausal age, the carcinomatosis was exacerbated in three and one responded to oophorectomy; the last patient became worse after a subsequent adrenalectomy.

The beneficial effects of hypophysectomy in the treatment of metastasizing carcinoma of the breast are usually considered to be due to removal of the pituitary stimulus for ovarian and adrenal oestrogens, and also of the pituitary hormones somatotrophin, and probably prolactin, which directly stimulate the breast carcinoma.

In general, increased secretion of pituitary trophic hormones follows the removal of control by peripheral hormones, such as ablation of the target glands. The authors of the American article postulate such a mechanism in their patients—namely that the operation removed oestrogen control of the pituitary gland which then either directly, or indirectly *via* adrenal tissue, increased its stimulative activity on the carcinoma. However, there is the claim that pituitary prolactin secretion is stimulated by oestrogens.

The validity of the hypothesis of these authors gains support from the improvement in two of the patients after cortisone suppression therapy, and from improvement in one and transient amelioration in two after subsequent hypophysectomy.—W.A.P.

PAXON, T. (1956). **An investigation into the incidence and aetiology of respiratory cancer in Eire.**—*Brit. Emp. Cancer Campaign. 33rd Ann. Rep.*, 1955. pp. 397-402. **159**

World Health Organization reports show that respiratory cancer mortality in the Republic of Ireland is lower than in England, 99 and 288 respectively per million living in 1949. P. studied records for 1950–53 for Ireland and comparable places in England. The average incidence of respiratory cancer in males in rural England was three times more than in rural Ireland. The corresponding figures for Tyneside were about one and a half times those for Dublin. The author's conclusions were as follows:—

Cancer is the specific successor of phthisis. Decrease of phthisis is followed by a specific increase of cancer in later life. Phthisis is the index for cancer. Opportunity for phthisis means opportunity for cancer. He also suggested that these concepts apply to non-respiratory TB. and respiratory cancer.—W.A.P.

HYDE, J. L., KING, J. M. & BENTINCK-SMITH, J. (1958). **A case of bovine myelogenous leukemia.**—*Cornell Vet.* **48,** 269-276. [Authors' summary modified.] **160**

P.M. examination of a 4-month-old female Angus–Holstein crossbred calf revealed scattered haemorrhages, greatly enlarged liver and spleen, marked anaemia, and immature granulocytes in the blood. The bone marrow contained about 70% blast forms and erythropoiesis was reduced. Megakaryocytes were rare. Various organs contained infiltrations of leucaemic cells On these findings a diagnosis of myelogenous leucaemia was made.

HORIUCHI, T. & ISHITANI, R. (1958). **Studies on the avian leucosis complex. 8. Distribution**

in Japan. — *Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 34, pp. 97-103. [In English. Summary in Japanese pp. 95-96. English summary modified.] **161**

Specimens of liver, spleen and pancreas from 374 chickens on 19 poultry farms were examined. Visceral lymphomatosis was recognized on 15 farms, erythroblastosis on 4 farms, myeloblastosis on 3 farms and the other types of leucosis on 4 farms. Demarcated lymphoid tissue was observed in about 31% of spleens and many granulocyte-series cells were observed in Glisson's capsule in about 18% of livers. Necrotic foci were found in the liver and spleen of about 17%. Microfilariae in the liver, leucocytozoa in the spleen, and sarcosporidia in the liver and spleen were also present.

I. Beard, D., Beaudreau, G. S., Bonar, R. A., Sharp, D. G. & Beard, J. W. (1957). **Virus of avian erythroblastosis. III. Antigenic constitution and relation to the agent of avian myeloblastosis.**—*J. nat. Cancer Inst.* **18,** 231-259. **162**

II. Bonar, R. A., Beard, D., Beaudreau, G. S., Sharp, D. G. & Beard, J. W. (1957). **Virus of avian erythroblastosis. IV. *p*H and thermal stability.**—*Ibid.* 831-842. **163**

I. Antigen studies revealed further similarities between the viruses of erythroblastosis and myeloblastosis, but the latter failed to respond to Forssman antibody. The agent of erythroblastosis was neutralized by anti-myeloblastosis immune serum.

II. At 2°C. the virus was most stable at about pH 7. It was more stable at low temp. than the virus of myeloblastosis. Erythroblastosis virus remained infective for several months when kept at −78°C.—R.M.

Dmochowski, L., Grey, C. E., Burmester, B. R. & Fontes, A. K. (1958). **Submicroscopic morphology of avian neoplasms. I. Studies on erythroblastosis.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 662-665. **164**

Dmochowski, L., Grey, C. E., Burmester, B. R. & Walter, W. G. (1958). **Submicroscopic morphology of avian neoplasms. II. Studies on granuloblastosis (myeloblastosis).** —*Ibid.* 666-669. [Authors' summaries modified.] **165**

I. Sections of affected spleen and liver from chicks with erythroblastosis were examined by electron microscopy. Intracellular spherical or spheroid structures, composed of a central dense core of 260 Å diam., surrounded by a less dense material and limited by an outer membrane, and having a diameter of 570 Å to 760 Å, were observed. These particles are similar in structure to those described in other tumours of chicks and in other tumours caused by viruses. Similar particles were not observed in cells of organs from healthy chicks.

II. Spleen and liver sections from chicks with granuloblastosis were examined by electron microscopy. Particles similar in size and structure to those seen in erythroblastosis were abserved in the cell cytoplasm. The average diameter of the particles was 670 Å and that of the central dense core was 260 Å. Similar particles were not observed in sections of organs from healthy chicks.

NUTRITIONAL AND METABOLIC DISORDERS

Balch, C. C. (1958). **Observations on the act of eating in cattle.**—*Brit. J. Nutr.* **12,** 330-345. [Author's summary modified.] **166**

The production of saliva, movements of the jaw, motility of the reticulum and changes in the amount of digesta in the reticulo-rumen were studied while five cows and two steers with rumen fistulas were receiving a variety of diets.

For every 10 lb. hay consumed 43–57 lb. saliva were added during eating, but with every 10 lb. concentrates only 12–15 lb. saliva were added. With other foods the mean amounts of saliva added per 10 lb. dry matter (d.m.) were: fodder beet 30 lb. and grass 53 lb. With concentrates the rate of secretion of saliva was faster than with hay, but the rapidity of ingestion was raised so that the d.m. content of concentrate boluses was high. The d.m. content of hay boluses did not fall during eating. With many diets the production of saliva during eating must exceed 100 lb. daily.

There was no evidence that the rate of movement of the jaw declined even with very large meals of hay. When hay alone was eaten the rate of contraction of the reticulum was relatively constant throughout the meal, but when the ration contained concentrates, or concentrates and fodder beet, in addition to hay the rate of contraction was high initially, but tended to decline during the meal.

In the period between meals the mean loss of d.m. from the reticulo-rumen (by absorption and passage to the omasum) was 0·6–0·7 lb. per 100 min.: during eating the loss rose to 1·4–2·1 lb. per 100 min.

The results were examined for evidence of factors reponsible for cessation of eating in cows receiving rations *ad lib*. There was no indication,

even when hay was consumed for 3 hours, of fatigue of the jaw muscles or reticulo-ruminal musculature, or of cessation of salivary secretion being of importance in this respect. The findings do not disprove the theory that roughages may often be consumed until a certain degree of 'fill' of the reticulo-rumen is reached, but with diets containing concentrates and fodder beet the intake was probably limited by factors other than 'fill'.

I. HUBBERT, F., JR., CHENG, E. & BURROUGHS, W. (1958). **Mineral requirement of rumen microorganisms for cellulose digestion *in vitro*.** —*J. Anim. Sci.* **17**, 559-568. **167**

II. HUBBERT, F., JR., CHENG, E. & BURROUGHS, W. (1958). **The influence of potassium, sodium, rubidium, lithium and cesium on *in vitro* cellulose digestion by rumen microorganisms with observations upon sodium and potassium influence in lamb fattening rations.**—*Ibid.* 576-585. [Authors' summaries modified.] **168**

I. Additions of manganese, iron, copper, cobalt, zinc, and boron to the fermentation medium did not result in increased cellulose digestion. Extremely low levels of copper, cobalt, zinc, and boron depressed cellulose digestion.

II. The presence of potassium in the fermentation medium was found to be essential for *in vitro* cellulose digestion whereas sodium was without effect in the absence of potassium. Addition of sodium to a fermentation medium containing 50 μg. or less K/ml. had either no influence or depressed cellulose digestion. However, when the K concentration was from 100 to 400 μg./ml. additions of sodium increased cellulose digestion. Chloride was not a limiting factor in these studies.

Rubidium was found to be capable of replacing about half of the K requirement for cellulose digestion, whereas lithium and caesium were ineffective.

A minimum conc. of 100 μg. K/ml. was essential for cellulose digestion. Although sodium is not essential it appears desirable to maintain a certain ratio between the conc. of Na and K for maximum cellulose digestion. Responses in weight gain from Na and K incorporated in a lamb fattening ration low in ash agreed with these results.

FINA, L. R., TERESA, G. W. & BARTLEY, E. E. (1958). **An artificial rumen technique for studying rumen digestion *in vivo*.**—*J. Anim. Sci.* **17**, 667-674. [Authors' summary modified.] **169**

The *in vivo* artificial rumen consists of an unglazed porcelain test tube attached to a glass frothing tube and gas escape mechanism. The substrates and inocula are placed in the tube and the apparatus suspended in the rumen of a fistulated animal. The tubes were found to be permeable to fatty acids and glucose but impermeable to bacteria. In tubes inoculated with rumen fluid the digestion of 500 mg. of cellulose was completed in about 48 hours. Cellulose was not decomposed in non-inoculated tubes. An initial inoculum continuously digested added increments of cellulose at an unabated rate to the extent of about 90% over an extended period (10 days). The quantity of the organisms in a diluted inoculum increased during active cellulose digestion.

LLOYD, L. E., DALE, D. G. & CRAMPTON, E. W. (1958). **The role of the caecum in nutrient utilization by the pig.**—*J. Anim. Sci.* **17**, 684-692. [Authors' summary modified.] **170**

Caecectomy had no deleterious effect on the growth rate of pigs. Differences in the ability of normal and caecectomized animals to digest various ration constituents were small. It was concluded that the caecum plays an insignificant role in the breakdown of food substances by the pig.

WALKER, C. A. (1958). **Studies on the cattle of Northern Rhodesia. II. The carcass characters of steers from normal veld grazing and supplemented with salt and protein.** — *J. agric. Sci.* **51**, 123-127. [Author's summary modified.] **171**

Supplementation of the veld grazing of indigenous steers in the dry season with 1 oz. of salt accelerated growth and the maturing of carcass characters. No benefit was obtained from adding a protein supplement to the salt; feeding protein without salt had only insignificant effects. The addition of 2 oz. of salt had a less favourable effect on growth and carcass characters. Evidence was found in the carcass characters that the tropical indigenous animal has the capacity of suspending growth in adverse nutritional conditions. It is suggested that not only time, but also growth is forfeited through prolonged immaturity.

I. RIGDON, R. H., FERGUSON, T. M,. FELDMAN, G. L., WHEELER, H. O. & COUCH, J. R. (1958). **A study of the mechanism of the experimentally induced pendulous crop in the turkey.**—*Amer. J. vet. Res.* **19**, 681-688. **172**

II. MANFRE, A. S., WHEELER, H. O., FELDMAN, G. L., RIGDON, R. H., FERGUSON, T. M. &

COUCH, J. R. (1958). **Fungi in the crop of the turkey.**—*Ibid.* 689-695. [Authors' summaries modified.] **173**

I. Pendulous crops were produced experimentally in young turkeys fed a ration containing 52·9% cerelose. These crops regressed in size and apparently became normal either when the birds were changed to a commercial ration or when starch was substituted for cerelose as the source of carbohydrate.

Saccharomyces tellustris, a gas-producing fungus, grows and multiplies rapidly in the presence of cerelose. This fungus occurs in large numbers and produces much gas in the crops of turkeys fed the cerelose ration. The constant internal pressure stretches the muscles in the wall of the crop, resulting in the loss of muscle tone which is characteristic of this type of pendulous crop.

II. *Candida albicans* and *Saccharomyces tellustris* occurred normally in the crops of turkeys. The microflora in the crop of the turkey was affected by the feed eaten: turkeys fed a ration containing cerelose as the source of carbohydrates had many more bacteria and fungi than turkeys fed the same ration with starch substituted for the cerelose.

The *C. albicans* and *S. tellustris* isolated from the crops of these turkeys did not ferment in a 3% solution of cerelose or starch. However, fermentation did occur in a 3 per cent concentration of cerelose in broth, but not if starch was substituted for cerelose. Utilization of certain vitamins by fungi in the crop may result in a decrease of vitamins available for the host.

OWEN, F. G., JACOBSON, N. L., ALLEN, R. S. & HOMEYER, P. G. (1958). **Nutritional factors in calf diarrhea.**—*J. Dairy Sci.* **41,** 662-670. [Authors' summary modified.] **174**

The influence of various components of milk-type diets on the consistency of faeces was evaluated. Calves were fed modified milk (whole or skim milk) diets to determine the effects of fat, lactose, minerals, and curd formation, individually and in all possible combinations. The presence of milk fat (3%) reduced diarrhoea. Increasing the mineral content of the milk to four times normal by the addition of simulated whey ash caused moderate diarrhoea, and increasing the lactose content to twice normal caused diarrhoea also, but to a lesser extent. The prevention of curd formation with sodium citrate did not increase the incidence of diarrhoea. The response to minerals may involve additional factors since, under slightly different conditions, the mineral content was increased to ten times normal without causing diarrhoea.

GREENHALGH, J. F. D. & GARDNER, K. E. (1958). **Effect of heavy concentrate feeding before calving upon lactation and mammary gland edema.**—*J. Dairy Sci.* **41,** 822-829. [Summary modified.] **175**

Heavy grain-feeding before calving resulted in no increase in the yield of fat-corrected milk during the first 84 days of lactation. Nine cows and nine heifers received, in addition to a basal roughage ration, a supplement of 378 and 273 lb. grain, respectively, for 6 weeks before calving. A similar number of controls received no grain. During lactation all animals were fed roughage and grain according to maintenance and production requirements. Supplemented animals made significantly greater increases in live weight but evidenced no significant increase in the incidence or severity of mammary oedema as determined by visual ratings and linear measurements. Heifers showed more oedema at calving than did older cows.

JOHNS, A. T., MANGAN, J. L. & REID, C. S. W. (1958). **Animal factors in the aetiology of bloat.**—*Proc. N. Z. Soc. Anim. Prod.* **18,** 21-30. Discussion: pp. 30-31. [Authors' conclusions.] **176**

The present paper has dealt with only some of the possible animal factors involved in the aetiology of bloat, but enough has been said to indicate how complicated the ailment is. With many animal and plant factors contributing to the condition, it may be that a certain balance of contributing agents is important in certain circumstances, whereas in others a different balance may give the same end results. A study of all the facets of this interesting problem in plant–animal relationship is necessary for the full understanding of the ailment, and at the same time can lead to a marked increase in knowledge of animal physiology, microbial metabolism and plant biochemistry.

SHERMAN, W. C., HALE, W. H., REYNOLDS, W. M. & LUTHER, H. G. (1958). **Nutritional studies of hydroxyzine and rauwolfia in cattle and lambs.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 91-94. **177**

Tranquillizing drugs were administered at doses less than those required to produce sedation. When cattle were each given 25 mg. of *Rauwolfia vomitoria* root in the food daily, or 1·25 and 10 mg. hydroxyzine, improvements in growth rate and the efficiency of feed utilization were noted. Optimum growth of lambs was obtained with 1·2 g. hydroxyzine per ton of feed, or 3 g./ton rauwolfia.—R.M.

HARDISON, W. A., GRAF, G. C. & ENGEL, R. W. (1958). **Value of an organic arsenical in the ration of young dairy calves.**—*J. Dairy Sci.* **41,** 683-687. [Authors' summary modified.] **178**

The daily rations of 16 dairy calves were supplemented with 60 or 120 mg. of sodium arsanilate from three days to eight weeks of age. Neither growth rate and efficiency of feed utilization, nor incidence of scouring were influenced significantly. No symptoms of toxicity were observed. These data indicate that (1) no benefit can be expected from supplementing the ration of the young, healthy calf with sodium arsanilate and (2) the young calf is tolerant to high concentrations of this organic arsenical.

SEWELL, R. F. & CARMON, J. L. (1958). **Reproductive performance of swine fed chlortetracycline over several generations.**—*J. Anim. Sci.* **17,** 752-757. [Authors' summary modified.] **179**

A ration containing 5 mg. chlortetracycline per lb. was fed continuously to sows throughout gestation and lactation for three generations. It resulted in an increase in the percentage of live pigs born and an increase in the percentage weaned of the live pigs farrowed. No difference was found in total litter size, birth weights, 21-day weights or weaning weights of piglets, some of which had access to meal containing 20 mg. of the antibiotic per lb.

COID, C. R. (1958). **The effect of oral administration of therapeutic doses of chlortetracycline and oxytetracycline on the growth of rhesus monkeys.** — *Vet. Rec.* **70,** 726-728. [Author's summary modified.] **180**

The gain in weight of rhesus monkeys given chlortetracycline or oxytetracycline in a concentration of 70 to 140 mg. per litre of drinking water for 12 to 14 days was greater than that of untreated monkeys. The antibiotics produced no apparent ill effects on the animals.

WILTON, G. S. (1958). **Steatitis on mink farms in Alberta.**—*Canad. J. comp. Med.* **22,** 240-244. [Summary in French.] **181**

This disease entity, sometimes called "yellow fat" disease, has been recognized as of common occurrence on mink ranches throughout Alberta for many years. It appears to be linked with a vitamin E deficiency caused by the presence in the ration of large amounts of polyunsaturated fatty acids, especially when they are not stabilized to prevent oxidation and rancidity which destroys the vitamin E present. Wheat germ meal or alpha-tocopherol is added to the daily ration to overcome the deficiency.

—R. V. L. WALKER.

GOETSCH, G. D. & PRITCHARD, W. R. (1958). **Effects of oral administration of short-chain fatty acids on certain blood and urine constituents of fasted, phlorhizin-treated ewes.**—*Amer. J. vet. Res.* **19,** 637-641. [Authors' summary modified.] **182**

Fasted, phlorhizin-treated sheep appear to demonstrate the effects of oral administration of short-chain fatty acids more clearly and distinctly than normal or fistulated animals.

When acetic acid was given, blood ketones were moderately increased, but there were no changes in blood glucose or urinary urea-nitrogen, or in the degree of glycosuria.

With propionic acid, blood glucose markedly increased, the blood ketones decreased, and glycosuria greatly intensified.

With butyric acid, blood glucose was depressed, blood ketones were markedly increased, and glucose excretion was reduced. Decreases in total urinary nitrogen and urinary urea-nitrogen were also observed after butyrate administration.

PRITCHARD, W. R., HENDERSON, W. & BEALL, C. W. (1958). **Experimental production of dissecting aneurysms in turkeys.** — *Amer. J. vet. Res.* **19,** 696-705. [Authors' summary modified.] **183**

Aortic ruptures caused by dissecting aneurysms were observed in Indiana turkey flocks that had been fed rations rich in protein and fat.

Fatal dissecting aneurysms occurred in turkeys fed similar rations under controlled conditions, but not in those fed rations rich in protein and poor in fat, or poor in protein and rich in fat.

Intimal thickening and large fibrous intimal plaques composed of fibroblasts, connective tissue, and lipid were always associated with ruptured blood vessels.

Changes observed in the aortic media were characterized by metachromatic staining with alcian blue; fragmentation and disorientation of reticulum; dissolution of the elastic fibres; and fibroblastic proliferation.

Blood vessels from the groups that did not develop aneurysms at the end of the experiment showed intimal changes, fibroblastic proliferative changes in the media, and dissolution of elastic fibres. Identical changes were found in

the survivors from the groups where aneurysms had occurred.

Dissecting aneurysms and rupture of the aorta, femoral artery, and the atrium occurred in turkeys fed *beta*-aminopropionitrile.

TENNENT, D. M., MUSHETT, C. W., KURON, G. W., OTT, W. H. & SIEGEL, H. (1958). **Influence of cobaltous chloride on aortic atheromatosis and plasma lipid pattern in cholesterol-fed chickens.** — *Proc. Soc. exp. Biol., N.Y.* **98,** 474-477. [Authors' summary modified.] **184**

Feeding of cobaltous chloride to cholesterol-fed chicks reduced the incidence and severity of aortic lesions and caused a decrease in blood cholesterol; the amounts of cholesterol in β-lipoprotein were similarly reduced. Cobalt in the diet did not seem to influence activity of the thyroid; it did not change the structure of the pancreatic α-cells when given in the diet or i/v. Cobaltous chloride s/c generally increased the incidence and severity of aortic lesions and the concentration of cholesterol in blood. These findings are in agreement with those of Caren & Carbo in the rabbit. The influence of cobalt in the diet on lipids and aortic lesions was opposite to that of parenterally administered cobalt. Specific systemic symptoms did not occur. It is concluded that the effect of cobalt in the diet of cholesterol-fed chicks is due to a local action in the intestinal tract.

COLOVOS, N. F., KEENER, H. A. & DAVIS, H. A. (1958). **Effect of pulverized limestone and dicalcium phosphate on the nutritive value of dairy cattle feed.**—*J. Dairy Sci.* **41,** 676-682. [Authors' summary modified.] **185**

Pulverized limestone added to both the all-roughage and mixed rations of 12 dairy heifers decreased protein digestibility and energy value. Dicalcium phosphate did not have this effect, and when fed along with pulverized limestone decreased the depressing effect of the limestone. These results indicate that feeding calcium in excess of requirements, particularly in wide Ca : P ratios, may reduce protein digestibility and energy value. More work is needed on the effects of different dietary concentrations of Ca and P on the utilization of food.

WICKHAM, N. (1958). **Calcification in soft tissues associated with dietary magnesium deficiency in the guinea pig.**—*Aust. vet. J.* **34,** 244-248. [Author's summary modified.] **186**

Soft-tissue calcification in g.pigs is described. The syndrome occurred in g.pigs caged for experimental purposes and fed commercial pelleted chicken-growing ration, which was low in magnesium, and a limited quantity of green feed. The gross and microscopic lesions are described.

Of the 200 animals examined, 6% showed calcification, and 69% had macroscopic nephritis.

Literature on the magnesium requirement of g.pigs is reviewed and it is concluded that the calcification was due to magnesium deficiency.

DEMPSEY, H., CARTWRIGHT, G. E. & WINTROBE, M. M. (1958). **Studies on copper metabolism. XXV. Relationship between serum and liver copper.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 520-523. [Authors' summary modified.] **187**

Restriction of dietary copper caused a prompt decrease in serum copper and a somewhat slower and less extensive depletion of liver copper in adult rats. A high copper intake increased the concentration of copper in both serum and liver. The increase was more rapid in serum than in liver during the first 20 days; thereafter it was greater in liver than in serum.

FENNER, H. & ARCHIBALD, J. G. (1958). **Boron in cows' milk.**—*J. Dairy Sci.* **41,** 803-806. [Summary modified.] **188**

Boron appears to be a natural constituent of cows' milk, the amount varying with the intake of the element in the feed. 300 mg. of boron fed daily as sodium tetraborate for 2 months to six cows increased the average amount of boron in the milk approx. 2·5 times, from 270 to 663 μg. per litre. The total daily amount of boron thus secreted appeared to be rather constant for individual cows, regardless of milk yield. A consistent increase in boron content of the milk was noted from the 1st to the 2nd month in each half of the trial, regardless of breed, group, or treatment. No plausible explanation for this increase fits the situation as a whole. A study of partition of the boron between cream and skim-milk indicated that about one-fourth of the total amount was in the cream and three-fourths in the skim-milk.

WAGNER, M. J. & MUHLER, J. C. (1958). **Influence of inorganic ions on fluoride retention in the rat.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 496-499. [Authors' summary modified.] **189**

The whole fluoride retention in rats receiving a fluoride drinking water containing a combination of ions of Ca, Mg, Fe, and PO_4 was significantly less than in rats drinking fluoride water containing no additional inorganic ions. Individual ions at various concentrations caused only small fluctuations in the proportion retained. The decrease in retention in rats drinking water containing a combination of ions suggests

that the effect of the ions may be additive or synergic. This may be important since most natural waters contain a group of several inorganic constituents, which should, therefore, be taken into consideration when communal water supplies are treated with fluoride. It is possible that if the combination of major inorganic constituents of natural waters exceeds a hitherto undetermined concentration, optimal fluoride concentration would need to differ from the accepted level of 1 p.p.m. in order to produce maximum anticariogenic benefits.

NEWLAND, H. W., ULLREY, D. E., HOEFER, J. A. & LUECKE, R. W. (1958). **The relationship of dietary calcium to zinc metabolism in pigs.**—*J. Anim. Sci.* **17,** 886-892. [Authors' summary modified.] **190**

Supplemental zinc improved weight gain and feed efficiency, and prevented dermatosis in pigs fed diets rich in Ca. Diets rich in Ca unsupplemented with zinc produced a significant drop in serum alkaline phosphate, and there was evidence of a higher rate of zinc metabolism.

HORVATH, D. J., SEELEY, H. W., WARNER, R. G. & LOOSLI, J. K. (1958). **Microflora of intestinal contents and feces of pigs fed different diets including pigs showing parakeratosis.**—*J. Anim. Sci.* **17,** 714-722. [Authors' summary modified.] **191**

Selective media were employed to enumerate faecal flora of pigs fed four diets. Average bacterial counts obtained were coliform, 10^{10}; enterococci, 10^{8}; lactobacilli, 10^{8}; yeasts, 10^{4}; moulds, 10^{4}; proteus species, 10^{4}; clostridia, none.

Selective media were used to estimate the number of viable organisms in the contents of the intestinal tract of pigs. The site of least activity appeared to be the stomach but there was no evidence of sterility or a "germicidal barrier" in the stomach.

Moulds were present in the feed and in the contents of the stomach, small intestine, large intestine and faeces in nearly the same numbers and are probably there principally as inert transient forms.

Efforts were made to determine the cause of the depression of coliforms and enterococci noted in the faecal flora of pigs fed diets which induce parakeratosis. Zinc, calcium and 5% lucerne meal did not appear to be responsible for the floral alteration. In some instances individual variation exceeded the 10^{2} limit previously found to describe the "normal" range.

KRATZER, F. H., VOHRA, P., ALLRED, J. B. & DAVIS, P .N. (1958). **Effect of zinc upon growth and incidence of perosis in turkey poults.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 205-207. [Authors' summary modified.] **192**

Turkey poults fed a purified ration containing a soya bean protein developed perosis. Addition of zinc to the ration improved growth and markedly reduced the incidence and severity of perosis. Approx. 40 p.p.m. of zinc, in addition to the 26 p.p.m. contained in the basal ration, were required for optimum growth.

ERWIN, E. S. & PAGE, H. M. (1958). **Availability of vitamin A and carotene as influenced by soft phosphate.**—*J. Anim. Sci.* **17,** 662-666. **193**

Soft phosphate, bone meal and dicalcium phosphate were compared as sources of supplemental phosphorus for sheep. Soft phosphate depressed weight gains and feed utilization. The inactivation of dietary vitamin A by soft phosphate was indicated by the magnitude of hepatic vitamin A loss in a 45-day period.—R.M.

GAŽO, M. (1958). Metabolizmus vitamínu A a karoténu. II. Režim vitamínu A a karoténu u dojníc v priebehu roka a vo vzťahu k úrovni výživy. [**Metabolism of vitamin A and carotene. II. In dairy cows, in relation to season and nutrition.**] — *Vet. Čas.* **7,** 66-79. [In Slovak. Summaries in English, French, German and Russian.] **194**

The vitamin A content in milk and the carotene content in milk and blood in two groups of cows were examined at monthly intervals over a period of one year. One group was kept on a normal, the other on a quantitatively and qualitatively deficient diet. In both groups there were seasonal variations in milk and blood carotene values, which, however, were very much higher in the normally fed group. Seasonal variation in the vitamin A content of milk in cows on normal diet was less apparent and also in the underfed group it remained on an almost constant, although much lower, level. [See also *V.B.* **27,** 854.]—E.G.

WAHLSTROM, R. C. & STOLTE, D. E. (1958). **The effect of supplemental vitamin D in rations for pigs fed in the absence of direct sunlight.** — *J. Anim. Sci.* **17,** 699-705. [Authors' summary modified.] **195**

In the absence of direct sunlight, the addition of 90 U.S.P. units of vitamin D per lb. to mixed rations complete in other known dietary factors resulted in little difference in rate of gain or calcium and inorganic phosphorus content of blood and bone.

A significant reduction of growth rate

occurred when a ration poor in Ca was fed to housed pigs which had free access to a mineral supplement. Five of eight pigs fed this ration also developed rickets. Supplementing this ration with vitamin D increased gains and decreased the number of pigs with rickets.

HOVE, E. L., FRY, G. S. & SCHWARZ, K. (1958). **Ineffectiveness of factor 3-active selenium compounds in muscular dystrophy of rabbits on vitamin E-free diets.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 27-29. [Authors' summary modified.] **196**

Muscular dystrophy developed within 3 weeks in young rabbits fed a basal vitamin E-free diet which contained soya bean meal as the protein source. Sodium selenite, and selenocystine, when added to the basal diet as sources of Factor 3-activity, did not influence the course of the disease. Control rabbits fed the basal diet but supplemented with α-tocopheryl acetate grew at normal daily rate of over 30 g. and remained in good health. Factor 3 assays in rats, and also activation analysis for selenium, proved that an adequate level of Factor 3 was present in the basal soya bean meal diet. The muscular dystrophy was due to lack of tocopherol alone. Factor 3-active selenium compounds are not substitutes for vitamin E.

KUTTLER, K. L. & MARBLE, D. W. (1958). **Relationship of serum transaminase to naturally occurring and artificially induced white muscle disease in calves and lambs.**—*Amer. J. vet. Res.* **19,** 632-636. [Authors' summary modified.] **197**

In 14 lambs with artificially induced white muscle disease, and in 17 naturally occurring cases, serum glutamic oxalacetic transaminase in serum was greatly increased.

Normal amounts were less than 100 units per ml. in both calves and lambs. Signs of the disease usually occurred in lambs with 2,000 to 3,000 units/ml. and in calves with 295 to 890 units/ml.

In 4 lambs, an increase of the enzyme occurred before the development of clinical signs of the disease.

Some apparently normal animals in affected flocks and herds also had moderate elevations of the transaminase values. Control animals from flocks and herds with no history of white muscle disease had uniformly low transaminase values.

GUERRANT, N. B. & STEEL, J. M. (1958). **Some effects of aureomycin and penicillin on thiamine and riboflavin metabolism in growing rats.** — *Proc. Soc. exp. Biol., N.Y.* **98,** 542-545. [Authors' summary modified.] **198**

Both penicillin and chlortetracycline increased the food intake of rats on diets deficient in thiamine, riboflavin, or both, but neither antibiotic influenced food consumption when adequate thiamine or riboflavin was administered. In general, growth paralleled food consumption, with indications that antibiotic supplementation improved food utilization, particularly when thiamine intake was sub-optimum. The amount of thiamine accounted for was increased by feeding rats penicillin or chlortetracycline supplements or a combination of the two antibiotics. However, absorption of thiamine and riboflavin was improved by antibiotics, particularly penicillin, as indicated by lower concentration of these substance in caecum and faeces, and higher concentration in liver and urine. While the possibility of riboflavin synthesis in the animal body is not excluded, it is considered that if it did occur it was not influenced by the antibiotics.

CAMPBELL, E. A. (1958). **Alopecia associated with diabetes.** — *Vet. Rec.* **70,** 537-538. [Author's summary modified.] **199**

Alopecia associated with diabetes and amenable to treatment with insulin is described in a pedigree bitch.

HALSE, K. & VELLE, W. (1958). **Blood calcium in bovine ketosis.** — *Amer. J. vet. Res.* **19,** 575-579. [Authors' summary modified.] **200**

In ketosis, concentrations of total acetone bodies in whole blood above 45 to 50 mg./100 ml. were associated with a depression of blood calcium. The lowering of blood calcium was apparently secondary and due to reduced feed intake. A hypocalcaemia of the same degree as in ketosis has been observed in cows fasted 48 hours. Some degree of incompatibility may exist between a strong acetonaemia and tetanic levels of serum calcium.

PENNY, R. H. C. (1958). **Clinical studies on bovine ketosis. I. Reduced milk yield associated with subclinical ketosis.**—*Vet. Rec.* **70,** 641-644. [Author's summary modified.] **201**

Subclinical ketosis in an Ayrshire herd was investigated. The highest percentage of cows positive to a modified Rothera's test was in March but the most marked reactions were in February. Many cows yielded less milk than was

anticipated, and daily fluctuations of up to 10 lb. were frequently observed. When the amount of silage fed was reduced by over 50%, there was a rapid fall in the number of cows excreting ketone bodies and in the concentrations of ketone bodies in the milk. A further, less spectacular fall occurred when the cows were turned out to grass.

DISEASES, GENERAL

ANON. (1957). **World livestock disease report, 1956.** Rome: Food & Agriculture Organization Paris: Office International des Epizooties. pp. 15. **202**

This is a first attempt to tabulate the occurrence throughout the World of major infectious and parasitic diseases of farm livestock. It was compiled from replies to questionnaires sent out by the Food and Agriculture Organization, in collaboration with the International Office of Epizootics; there is no information from the U.S.A., the U.S.S.R. and its satellite countries, and China. By means of the report one can determine whether a disease occurs in a given species of animal in a given country, whether it is sporadic, common, widespread, localized, under control or eradicated, and whether it is notifiable. Code numbers are used to describe degrees of incidence and animals. The report comprises 12 large tables, each measuring 49 × 34 cm., fitted into a foolscap folder, which makes it somewhat cumbersome to use. However, it is planned to produce a more comprehensive report for 1958 in the form of a Yearbook on Animal Disease, and it is expected that the format and completeness will be improved upon. The report will be an indispensable source of reference.—R.M.

KEYMER, L. F. (1958). **A survey and review of the causes of mortality in British birds and the significance of wild birds as disseminators of disease. Part I.**—*Vet. Rec.* **70,** 713-720. [Author's summary modified.] **203**

This paper is based on the P.M. examination of 513 British birds between March 1954 and October 1957. 74 species were represented; 460 were either feral or semi-domesticated and the remainder had been kept in captivity.

Natural hazards, violence, poisoning, and disease are considered to be the main causes of death in feral birds.

Poisoning and non-specific diseases diagnosed in this survey are dealt with in some detail.

The bacterial, mycotic, and virus diseases diagnosed in this survey are pasteurellosis, staphylococcosis, erysipelas, paracolon infection, pseudotuberculosis, *Salmonella typhi-murium* infection, tuberculosis, aspergillosis, sarcosporidiosis, and avian pox.

SELLERS, A. F., HEMINGWAY, A., SIMONSON, E. & PETERSON, W. E. (1958). **Unipolar and bipolar electrocardiographic studies in dairy cattle.** — *Amer. J. vet. Res.* **19,** 620-624. [Authors' summary modified.] **204**

The reproducibility of certain bipolar electrocardiographic leads was studied on 96 normal, dairy cattle.

A bipolar chest lead is described which appears to be suitable for general use.

PORTER, H. & AINSWORTH, S. (1958). **Reaction of brain copper proteins with sodium diethyldithiocarbamate in normal and in hepatolenticular degeneration.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 277-280. [Authors' summary modified.] **205**

Less than 15% of copper in crude bovine cerebrocuprein I (Cu content 0·15%) and in fraction I copper proteins from normal human brain reacted directly with sodium diethyldithiocarbamate. In brain from 2 cases of hepatolenticular degeneration in 2 human beings 29 to 45% of the fraction I copper reacted directly. This direct-reacting copper, amounting to more than 7·5 μg./g. fresh tissue, *i.e.*, more than twenty-fold the amount of direct reacting copper in normal human fraction I, may represent copper bound to brain proteins which are normally copper-free.

BRATANOVIĆ, U., SOFRENOVIĆ, Đ. & STAMATOVIĆ, S. (1957). **[Bovine chronic haematuria in Serbia. I. Special features.]**—*Acta vet. Belgrade* **7,** 29-36. [In Serbian. Summary in German.] **206**

Features of a fatal disease of unknown aetiology, believed to be an atypical form of bovine chronic haematuria, occurring in Serbia, were described. It occurred irrespective of the season, mainly in castrated males over 3 years of age, less frequently in cows, and exceptionally in bulls. There was urinary incontinence, particularly after strenous work. Macroscopically the urine was of normal appearance but microscopically erythrocytes were demonstrable in the sediment. Following massage of the bladder *per rectum* there was haematuria. The wall of the bladder was elastic and diffuse nodules were palpable. Death occurred in a matter of weeks or months, preceded by anaemia, emaciation

and cachexia. P.M. lesions in the bladder were generally those of the typical form with the exception that they were more extensive and malignant tissue proliferations, mainly of a carcinomatous or sarcomatous nature, were more numerous, damaging the sphincter and the muscular layer.—E.G.

STAMATOVIĆ, S. M. & CVETKOVIĆ, A. (1957). Primena probe sa metilen-plavim u cilju ispitivanja funkcionalnog stanja bubrega u goveda. **[Methylene-blue kidney function test in cattle.]**—*Vet. Glasn.* **11,** 1141-1147. [In Croat. Summary in German.] **207**

Doses of 0·4 mg./kg. body wt. of 2% methylene blue were injected i/m into 6 healthy cattle and into 14 affected with chronic endometritis, cystitis, myocarditis, purulent chronic nephritis and corynebacterial pyelonephritis. In healthy cattle urinary excretion of methylene blue was completed within 24 hours, reaching a peak 1–2 hours after injection. In three with purulent chronic nephritis, six with bacterial pyelonephritis and one with myocarditis urinary conc. of methylene blue was lower, began later, and was spread over a longer period.—E.G.

MCDONALD, J. & MACFARLANE, W. V. (1958). **Renal function of sheep in hot environments.** —*Aust. J. agric. Res.* **9,** 680-692. [Authors' summary.] **208**

The renal functions of adult Merino and crossbred sheep have been measured throughout the year in Brisbane (lat. 27°S.), and during acute and chronic exposure to hot environments (temperature 43°C dry bulb, 36°C wet bulb).

In summer, glomerular filtration reached twice the rate found in winter and it rose during 2–9 weeks' exposure to heat. There was no change of glomerular filtration during 4 hours' acute heating at 43–44°C dry bulb (36–37°C wet bulb).

Renal plasma flow, estimated by *p*-aminohippurate clearance, showed no variation with season, nor with exposures to heat.

The mean tubular maximum of secretion of *p*-aminohippurate (Tm_{PAH}) of individual sheep ranged from 70 to 110 mg/min (2·1–2·6 mg per kg/min). These values are nearly twice those reported for other species. Some sheep showed depression of the Tm_{PAH} on long exposure to heat.

PALMER, A. C. (1958). **A test for vestibular function in sheep.**—*Brit. vet. J.* **114,** 307-314. [Author's summary.] **209**

A method is described for producing nystagmus in sheep by caloric stimulation of the labyrinth. Nystagmus was elicited by irrigation of the external ear with water at 30°C.

The duration of the induced nystagmus, from the beginning of irrigation to the last nystagmic movement, showed variation both between and within individual animals. In sheep the test is useful in detecting loss of function of the vestibular apparatus.

BENSON, D. A. (1958). **Moose "sickness" in Nova Scotia—I.**—*Canad. J. comp. Med.* **22,** 244-248. [Summary in French.] **210**

BENSON, D. A. (1958). **Moose "sickness" in Nova Scotia—II.**—*Ibid.* 282-286. **211**

I. Details from field observations, gross necropsy, and blood, bacterial, serological and virological studies are presented relative to an obscure disease of moose which has been incriminated over a period of years in the depletion of the moose population. No identification of a causative agent has been made to date.

II. An account of the histopathological studies made on the body tissues. While little definite information was evident, a significant degeneration of neural tissues in the brain was observed. Experimental treatment with trace elements was inconclusive.

It is apparent that the condition observed in Nova Scotia was identical with that reported from Minnesota and Maine. It is suggested that climatic changes altering environmental conditions may be responsible for resultant nutritional problems which may constitute a primary cause for the decrease in the moose population.

—R. V. L. WALKER.

ANON. (1958). **A disease of suckling pigs.**—*Canad. J. comp. Med.* **22,** No. 7. p. 3 of advertisements. **212**

Within the past year a disease resembling Transmissible Gastroenteritis affecting unweaned piglets has been recognized throughout Ontario, but with sufficient variation in the clinical symptomatology to warrant calling it Vomiting and Wasting Disease for the time being.

Limited attempts to prove the causative agent to be a virus have been inconclusive. At present, owing to the highly contagious nature of the disease, a control policy of complete isolation of pregnant sows is being advocated.

—R. V. L. WALKER.

LAWRIE, R. A., GATHERUM, D. P. & HALE, H. P. (1958). **Abnormally low ultimate pH in pig muscle.**—*Nature, Lond.* **182,** 807-808. [Authors' summary modified.] **213**

The ultimate pH, after post-mortem glycolysis, is influenced by the type of muscle, the species and the physiological condition of the

animal. In the horse, ox and pig, the glycogen reserves of which have not been depleted by stress, an ultimate pH of about 5·5 is characteristic. Stress is therefore normally associated with values of ultimate pH above 5·5. Pig muscles having an ultimate pH considerably lower than 5·5 are loose in texture, contain exudate and are generally almost white. This condition is similar to "muskeldegeneration" in Danish pigs and "la myopathie exsudative dépigmentaire du porc" in France, but there are also features which appear to distinguish it from these and other dystrophic disorders.

JACKSON, C. (1958). **Preliminary note on the pathology of canine neo-natal mortality.** — *Vet. Rec.* **70,** 288-289. **214**

P.M. examination of "fading" puppies shows a general picture of anaemia with bright red discoloration of nasal mucosa and excessive, fluid, dark red bone-marrow. Microscopically there is widespread reticulo-endotheliosis with neutropenia and increased eosinophiles. Profound changes of an aplastic-anaemic type are seen in bone-marrow, and severe necrobiotic-desquamative changes in the thyroid, sometimes with evidence of diffuse parenchymatous goitre. Extramedullary haemopoiesis and bilirubin casts in bile capillaries are observable in liver; catarrhal infiltration of stomach and bowel, and hyperaemia and oedema of nasal mucosa.

J. describes sparse, small intra-erythrocytic bodies resembling, but too small for, *Babesia* or *Theileria,* of constant size range, possessing chromatic nuclei and cytoplasm, containing deoxyribonucleic acid and giving the "Romanovsky effect" within the cytoplasm of hepatic cells and in renal epithelium. Slender crescentic merozoite-like bodies occur in intestinal crypts and uterine glands.—J. PASFIELD.

MEIER, H. & CLARK, S. T. (1958). **A survey of heart diseases of dogs.** — *Vet. Ext. Quart. Univ. Pa No.* 150 pp. 65-74. **215**

Heart disease was encountered in 619 of about 3,000 dogs examined P.M. The conditions were: myocarditis, myocardial oedema, haemorrhage, necrosis, infarction, 30%; vascular disease (inflammatory, degenerative, metabolic), periarteritis nodosa, necrotizing arteritis, athero-, arteriosclerosis, 25%; valvular diseases (inflammation, oedema, haemorrhage, fibrosis) 25%; dilatation, hypertrophy, atrophy, 15%; endocarditis, subendocardial haemorrhage, oedema, necrosis, calcification, fibrosis, 10%; congenital anomalies, 1%. The various causes of these conditions are briefly discussed.

—T.E.G.R.

LASCELLES, A. K. (1958). **Radiography in the diagnosis of intestinal obstruction in the small animal.**—*Aust. vet. J.* **34,** 116-117. **216**

A radiographic technique is described for detecting the presence of gas and fluid proximal to an intestinal obstruction.

The dog is placed in the supine position, the X-ray tube is positioned so that the X-ray beam passes horizontally over the gas-fluid interface. In intestinal obstruction one or a number of gas-fluid levels with distinct meniscal edges are observed on a plain X-ray.—R. N. WEAVER.

MEIER, H. (1958). **Myopathies in the dog.**—*Cornell Vet.* **48,** 313-330. [Author's summary modified.] **217**

The literature on muscular dystrophy in animals was reviewed, and muscular disease in 3 dogs was described in detail.

Two cases were remarkably similar to polymyositis in man and one appeared to have been caused by vitamin E deficiency at birth.

WHITNEY, J. C. (1958). **Progressive muscular dystrophy in the dog.**—*Vet. Rec.* **70,** 611-613. [Author's summary modified.] **218**

The clinical history, P.M. findings, and histopathology of the muscle lesions in 3 dogs with progressive muscular dystrophy are recorded. The aetiology and relationship of this condition to similar conditions in man and animals are discussed. The condition appears to be similar to restricted muscular dystrophy of the limb-girdle type in man and bears little relationship to the muscular dystrophies of the ox and sheep.

TUMLIN, J. T. & POMEROY, B. S. (1958). **Bluecomb disease of turkeys. V. Preliminary studies on parental immunity and serum neutralization.**—*Amer. J. vet. Res.* **19,** 725-728. [Authors' summary modified.] **219**

The authors were unable to detect parental immunity in day-old poults.

Antiserum, at a 1:2 dilution, from three flocks recovered from bluecomb disease, completely neutralized Selas 02 filtrates of intestines from infected birds. Slight or no neutralization was observed at the 1:4 dilutions for 2 flocks. The 1:4 dilutions of antiserum from the third flock showed good, but incomplete neutralizing capacity.

Weight gains of the uninoculated control poults and of those inoculated with 1:2 serum-filtrate dilutions were consistently higher than those inoculated with filtrate alone or with 1:4 and 1:8 serum-filtrate dilutions. The severe debilitating effect of bluecomb disease is recorded.

BACH, S. J. & HIBBITT, K. G. (1958). **The influence of storage conditions for blood samples on the analysis of serum.**—*Vet. Rec.* **70,** 473-478. [Authors' summary modified.] **220**

The concentrations of certain constituents of serum changed considerably during storage for a few days. In blood from normal cows, changes were determined during storage in the concentrations of glucose, citrate, pyruvate, α-ketoglutarate, ammonia, urea, amino-nitrogen, and cholesterol. The stability of ketone bodies which were added to serum was also investigated. Though the addition of sodium fluoride to blood ensured the stability of some constituents at room temp., other constituents, such as ketone bodies, proved to be much less stable unless samples were kept in a frozen state. Preliminary bacteriological investigation showed that the rapid breakdown of urea in serum in the absence of fluoride was due to bacteria, but not *Proteus vulgaris,* a common bovine skin contaminant. The effects of storage conditions on individual serum constituents are listed.

GÜRTLER, H. & KOLB, E. (1958). Untersuchungen über das Vorkommen von Mucoproteiden im Serum von Rindern, Kälbern, Schafen und Ziegen. **[Mucoproteins in the sera of cattle, calves, sheep and goats.]** — *Zbl. VetMed.* **5,** 589-600. [Summaries in English, French and Spanish. English summary modified.] **221**

A mucoprotein soluble in perchloric acid was isolated from sera and its content of hexose, glucosamine, protein and tyrosine studied. The proteins precipitated by the acid were separated by centrifugation and by filtration. The quantity of mucoproteins obtained by centrifugation was usually higher than by filtration. The mean values for cattle and sheep are tabulated.

The highest values were found in the calf, and were due to the presence of a special glucoprotein fraction called fetuin in calf serum.

The clinical importance of determining mucoproteins is discussed. In tumours and inflammatory conditions the values are raised, whereas in diseases of the liver parenchyma they are lowered.

BAIR, W. J., TEMPLE, L. A., WILLARD, D. H., MARKS, S. & SMITH, G. D. (1958). **Hazards of inhaled radioactive particles.** — *Radiation Res.* **9,** 88. [Authors' abst. modified.] **222**

Mice inhaling "insoluble" particles, either radioactive ruthenium or plutonium oxides, were shown to retain the radioisotope in the lung with "biological half-lives" of 30 to more than 200 days. Particles of AgI^{131} were apparently quite soluble in pulmonary tissue. Radio-iodine in the thyroid reached a peak 10 hours after inhalation. Results were similar after inhalation of radio-iodine gas. Although radioactive strontium sulphate showed a long biological half-life after inhalation it was rapidly dissolved in the lung and translocated to the skeleton. The pathological effects of inhaled radioactive particles were also studied. Mice exposed to such particles showed two types of lesions: tumours, and a sterile pneumonitis. Histological examination revealed four kinds of tumours: benign papillary cystadenoma, malignant squamous-cell carcinoma, malignant fibrosarcoma, and a malignant undifferentiated tumour. The latent period for the development of malignant lung tumours was at least 200 days.

BRASS, W. (1958). Experimentelle Untersuchungen zur Bekämpfung des Schocks. **[Experimental studies on the control of shock.]** — *Zbl. VetMed.* **5,** [No. 6.] 515-574. [Summaries in English, French and Spanish. English summary modified.] **223**

In a review of the literature the more important results of earlier work on shock are outlined. Various procedures for provoking shock in dogs and mice were developed and their reproducibility demonstrated.

Experimental therapeutic studies with chlorpromazine, the combination of promethazine – demerol – chlorpromazine, dihydroergocristine and atropine and to some extent with hydergin were carried out. The influence of these substances on shock were studied in animals at their normal body temperature and in others cooled to 30° to 31°C. The importance of barbiturate narcosis in haemorrhagic shock was tested, as also was the effect of continued infusion of noradrenaline in endotoxin shock treated with chlorpromazine.

MAJNO, G. & KARNOVSKY, M. L. (1958). **A biochemical and morphologic study of myelination and demyelination. II. Lipogenesis *in vitro* by rat nerves following transection.** —*J. exp. Med.* **108,** 197-214. [Authors' summary modified.] **224**

Bilateral section of the sciatic nerve was performed on rats. At varying intervals, samples of nerve were taken from the distal and proximal stumps and from the tissue which bridged the gap between them. These samples were incubated with glucose and a labelled lipid precursor (acetate or phosphate). The total lipids were then extracted and their radioactivity was measured. Normal sciatic nerves served as con-

trols. In the distal portion undergoing Wallerian degeneration, the lipid content began to fall before any removal of myelin could be detected histologically. It is suggested that a period of "non-cellular removal" precedes the physical breakdown of the myelin. Changes in respiration and in lipogenesis from acetate followed a triphasic course: passive changes (1 to 3 days), cellular reaction (4 to 50 days) and atrophy (from 50 days onward). The incorporation of phosphate into the lipids was increased at all stages from 22 hours after section. It is suggested that the hypertrophying Schwann cells synthesize some lipid moieties at a faster rate than others. In the proximal stump lipogenesis from acetate was low for as long as 32 days. It appears, therefore, that the maintenance of the myelin sheath is impaired also above the level of section. In the "union tissue" which developed between the stumps, before the histological appearance of myelin, lipogenesis was low; later it rose above levels for normal nerve. This pattern of lipogenesis is similar to that in growing nerves.

POISONS AND POISONING

ANON. (1958). **Danger on the farm.**—*Brit. med. J.* April 26th, 989-990. **225**

An annotation dealing with the more dangerous chemicals used to control insects and other pests on the farm.

Farm workers may not realize, even when warned, that chemical mixtures or products may be dangerous. The experience of accidents to human beings in Gt. Britain during the last decade due to these chemicals is limited to very few fatal or serious cases of poisoning. During the peak period of spraying of the dinitro-cresol (D.N.C.) and chemically related weedkillers and some of the organophosphorus insecticides there is considerable danger if they are misused.

The application of these poisons may be done hurriedly, because of emergency or difficulty in fitting the operation into general farm routine and a tired worker may give less than usual attention to the necessary precautions. The usual cause of poisoning is contamination by spills or splashes of the concentrated materials.

During the past two years a voluntary scheme has been in operation, whereby the manufacturers give information to an advisory committee of the Ministry of Agriculture concerning new materials or new uses for old materials. All the advice on labels of pesticide products is drawn up in consultation with that committee.

The dinitrocresol weedkillers have the worst record in Britain.

The organophosphorus insecticides range from the virtually non-toxic malathion through the moderately poisonous materials like diazinon and demetonmethyl ("metasystox") to the potentially dangerous ones like parathion and the newly introduced "Phosdrin" and amiton ("Tetram").

Chemicals that will reverse the poisonous effects of organophosphorus insecticides have been studied recently and success has been reported in tests on animals. One such product, pyridine aldoxime methiodide (P.A.M.) has been used for the treatment of affected men in Japan and in Denmark. Atropine must accompany the use of P.A.M.

A lesser danger of poisoning lies in the handling of recently sprayed crops, and in the U.S.A. several groups of workers developed mild symptoms of poisoning when pruning and stripping fruit crops so treated.

The use of arsenic to kill potato haulms has increased and the danger must be borne in mind.

Antibiotics such as streptomycin are in use on a limited scale to prevent bacterial diseases of plants and trees and might be responsible for an occasional case of hypersensitive action.

Mercury compounds are still widely applied as fungicides despite misgivings about the dangers from residues in food crops. Ethyl mercury salts are popular among tomato growers; they are now scheduled poisons following a fatality attributed to the handling of the concentrated material by a greenhouse worker.

The nature of the illness in the different types of poisoning, especially the indications in the early stages of such illness that might raise suspicion, was discussed, also the importance of reporting accidents.—W.A.P.

LINK, R. P., SMITH, J. C. & NEWTON, D. I. (1958). **Toxic effect of chlorinated naphthalenes in pigs.**—*J. Amer. Vet. med. Ass.* **133**, 83-85. [Authors' summary modified.] **226**

In three trials, pigs weighing 33 to 180 lb. were given, orally, over 8 to 10 days, hexachloronaphthalene in a maize oil soln. in total dosage of 50 to 100 mg. per lb. body wt. Two pigs were sprayed repeatedly with an oil soln. of pentachloronaphthalene. A total of 50 mg./lb. did not cause decrease of the plasma vitamin A; 60 mg./lb. caused some decrease; 70 mg./lb. caused marked decrease but not fatal poisoning; 80 mg./lb. caused fatal poisoning in 1 of 3 of

the pigs; and 90 and 100 mg./lb. fatally poisoned all 6 pigs. Characteristic chloronaphthalene toxicity in cattle was not observed. In the fatally poisoned pigs, depression and anorexia were observed until 48 to 72 hours before death.

Pigs are considered more resistant to chlorinated naphthalene than cattle.

SCHULTZE, M. O., PERMAN, V., BATES, F. W. & SAUTTER, J. H. (1958). **Failure of DL-batyl alcohol to prevent aplastic anemia in calves.** —*Proc. Soc. exp. Biol., N.Y.* **98,** 470-474. [Authors' summary modified.] **227**

Feeding of ¾ or ½ lb. trichloroethylene-extracted soya bean oil meal/100 lb. to young calves daily for 10 days induced aplastic anaemia and caused death 14-25 days after cessation of treatment. DL-batyl alcohol, injected by various routes before appearance of clinical symptoms, failed to prevent development of aplastic anaemia.

PERCIVAL, J. C. & THORNTON, R. H. (1958). **Relationship between the presence of fungal spores and a test for hepatotoxic grass.**—*Nature, Lond.* **182,** 1095-1096. **228**

A chemical test, known as the "beaker test", had been developed by means of which samples of herbage likely to produce facial eczema when grazed by sheep could be recognized. In spite of good correlation there was no evidence for chemical alliance between the "beaker test" substance and the toxin which damaged the liver.

This note records the finding of fungal spores on herbage samples and on rye-grass which gave positive "beaker tests". The fungus has been isolated and identified as *Sporidesmium bakeri*. Spores of the fungus from cultures gave positive "beaker tests".

Investigations are being carried out to ascertain whether this fungus produces the hepatotoxin as well as the "beaker test" substance. [See also *V.B.* **28,** 4094.]

HEATH, G. B. S. & WOOD, B. (1958). **Bracken poisoning in cattle.**—*J. comp. Path.* **68,** 201-212. **229**

The authors speak of a marked similarity between poisoning by bracken fern (*Pteris aquilina*) and radiation sickness. They studied the importance of thrombocytopenia in relation to the haemorrhagic syndrome in the disease. There has been curiously little investigation of the clotting defect in this condition. The bleeding which occurs from the nostrils and into the intestine may be a result of a lack of the normal process of inflammation which is associated with gross leucopenia. In radiation sickness, oropharyngeal angina and necrotic ulceration of the large and small intestines may occur and this could account for the clinical bleeding.

They fed four heifers on a proprietary concentrate, plus hay and bracken in such proportions that one got equal parts, one got one-third and one got two-thirds bracken, one receiving hay alone. The fodder was given *ad libitum* and uneaten residue was weighed.

In the animals that developed poisoning the production of thrombin and the level of blood fibrinogen were abnormally high, but could not be explained. No cause other than thrombocytopenia for the clotting defects in these animals could be demonstrated. They gave details of observations made on each animal.—W.A.P.

OWEN, L. N. (1958). **Hair loss and other toxic effects of Leucaenia glauca ("Jumbey").**—*Vet. Rec.* **70,** 454-456 & 457. [Author's summary modified.] **230**

A study of the literature relating to the toxicity of *Leucaena glauca* was correlated with observations in the Bahamas. Loss of hair in horses eating the legume is caused by the toxic amino-acid mimosine. The long hair of the mane and tail is chiefly affected. Ring formation occasionally occurs on the hooves. Similar hair loss occurs in pigs, and the effect on both horses and pigs is the same in the Bahamas as in Indonesia. In many countries including Hawaii, Indonesia, and the Bahamas, *L. glauca* is a valuable forage plant, and it appears to have no toxic effects in ruminants. Indigenous sheep in the Belgian Congo fed on *L. glauca* showed loss of wool and developed a haemorrhagic cystitis. Mimosine can be estimated by employing a colour reaction with ferric chloride. Its toxicity for rats is reduced by exposure to moist heat or when ferrous sulphate is included in the ration.

WILSON, A. L., JOHNSTON, W. G., MCCUSKER, H. B. & BANNATYNE, C. C. (1958). **Hemlock water dropwort (*Oenanthe crocata*) poisoning in cattle.**—*Vet. Rec.* **70,** 587-590. [Authors' summary modified.] **231**

Evidence is presented to show that poisoning by *O. crocata* may be much more common than is believed. The literature on the subject is reviewed. Five outbreaks in south-west Scotland are described. Methods of treatment are suggested.

GORDON, R. N. (1958). **The symptoms, diagnosis and treatment of snake-bite in the dog.** —*Aust. vet. J.* **34,** 216-221. **232**

G. reported 8 cases of snake-bite in the dog.

Oedema at the site of the puncture wound was the most constant feature. Haemoglobinuria, vomition and depression occurred in the cytolytic and haemolytic syndrome. Neurotoxic syndrome varied from mild to continuous tetanic muscular spasms. Diagnosis was based on the history of snake-bite and clinical signs.

Treatment by 1,500 to 3,000 units of tiger-snake antivenene given intravenously was indicated in all cases. Supportive therapy included sedatives, antihistamines, diuretics and fluids. Local treatment of the puncture wound was not advocated unless treated immediately following the snake-bite.

A table comparing the symptoms observed by G. in the dog to symptoms recorded in man is presented.—R. N. WEAVER.

STOCKDALE, H. G. (1958). **The toxicity of pyrimethamine for the chick.**—*Vet. Rec.* **70,** 720-726. [Author's summary modified.] **233**

Continuous administration of 0·001% and 0·0025% pyrimethamine in the food to chickens from an early age results in depression of average weight; stunting with retarded feathering and some deaths; interference with nuclear division of r.b.c.; and macrocytic anaemia. Severity of these features varies as the level of pyrimethamine administered. Chickens are most susceptible to the toxic effects during the first days of life, particularly if kept on wire floors rather than on deep litter. Typical P.M. findings are described.

The simultaneous administration of folic acid or of procaine penicillin offsets the adverse effects of pyrimethamine on appearance, weight gain, and blood. Whereas folic acid reduces the therapeutic efficacy of pyrimethamine, procaine penicillin increases the efficacy of low-level combinations of pyrimethamine plus sulphaguanidine, when given continuously for prevention of caecal coccidiosis, in proportion to the level of penicillin used.

HELRICH, K., HANSENS, E. J. & GRANETT, P. (1958). **Residues in milk from dairy cattle treated with methoxychlor for fly control.**—*J. agric. food Chem.* **6,** 281-283. [Authors' summary modified.] **234**

Methoxychlor was present in minute, but detectable amounts in the milk of treated cows on 4 farms. When treatment stopped the concentration fell rapidly.

See also absts. **282** (doping of racehorses); **295** (advances in veterinary science).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease.)

KRADOLFER, F. & NEIPP, L. (1958). **Experimental studies on amebicidal, antibacterial, and antiparasitic phenanthroline compounds.**—*Antibiot. & Chemother.* **8,** 297-308. [Summary in Spanish p. 324.] **235**

The action of 4, 7–phenanthrolene–5, 6–quinone and its monosemicarbazone derivative on *Entamoeba histolytica* and *Trichomonas foetus* was investigated. Both compounds inhibited the growth of trichomonads at a conc. of 1:640,000 and were much more active in this respect than emetine hydrochloride, fumagillin or chlortetracycline. Hamsters naturally infected with trichomonads were consistently free from the parasites on the 5th day following commencement of oral administration of either compound at 100 mg./kg. body wt., twice daily for 4 days. The compounds were also active against the nematodes *Syphacia obvelata* and *Aspicularis tetraptera* in mice when two or three doses of 0·25-1g./kg. body wt. were given by mouth. No toxic effects were observed at doses below 300 mg./kg. but at higher doses dilatation of renal tubules and damage to renal epithelium occurred.—R.M.

STOWE, C. M., ARONSON, A. L. & JOHNSON, K. (1958). **The pharmacology of sulfabromomethazine, a new long-acting sulfonamide, in cattle.**—*Amer. J. vet. Res.* **19,** 345-353. **236**

The drug is relatively insoluble at pH 6·0-8·0. A dose of 214 mg./kg. *per os* or i/p, produced higher blood levels (for 48 and 40 hours respectively) than the generally accepted therapeutic minimum. In the cerebrospinal fluid and milk the levels were about one fifth of those in the plasma and whole blood. Acetylation, in the blood, was about 12% and in the urine it was 41-85% of the total sulphonamide present. After a single i/v dose of 214 mg./kg., excretion through the kidney continued for 6 days and concentration in the urine was generally below the point of *in vitro* precipitation. There was no crystalluria or evidence of kidney damage *post mortem,* even after two or four times the suggested therapeutic dose or after daily oral dosage for 18-21 days. Toxicity, characterized by weakness, ataxia and collapse, was only observed after i/v administration of the dose in a concentration of 5 or 12·5%; this route is, therefore, not recommended. In calves,

single i/p or i/v doses or repeated oral doses did not produce lesions attributable to the drug and the differential w.b.c. count was not significantly affected by repeated oral doses. Limited trials are taken to indicate possible uses for the drug and a dose of 1·5 gr./lb., orally every 48 hours, is suggested.—T.E.G.R.

SWENSON, M. J., UNDERBJERG, G. K. L., GOETSCH, D. D. & AUBEL, C. E. (1958). **Blood values and growth of newborn pigs following subcutaneous implantation of bacitracin pellets.**—*Amer. J. vet. Res.* **19,** 554-559. **237**

Blood samples were taken from 47 piglets in six litters at 36 hours of age and at weekly intervals thereafter. Thirty-one of the piglets were implanted with pellets containing 1,000 units of bacitracin and 16 left as controls.

The bacitracin treatment did not cause any alteration in the blood picture, did not affect growth rates, and did not produce any histological lesions. A subclinical anaemia was noted in all the piglets.

ENGLISH, P. B. (1958). **Penicillin serum levels in the dog following oral dosage with a calcium salt of penicillin V.**—*Aust. vet. J.* **34,** 202-206. **238**

E. determined serum penicillin concentrations following the oral administration of one 200 mg. calcium phenoxymethylpenicillinate tablet to both fasted and fed dogs whose body weight ranged from 12·3 kg. to 42 kg. The dose was repeated at 8 hours.

In fasted dogs the mean maximum serum concentration of 2·1 μg./ml. was attained at 2 hours; 5 of 6 sera were penicillin-positive 6 hours after the initial dose. In fed dogs mean maximum concentrations of 1·2 μg./ml. were attained at 1 hour and only 1 of 6 sera were penicillin-positive at 6 hours. Sera from both fasted and fed dogs were negative 8 hours after the initial dose.

E. recommends that 200 mg. calcium phenoxymethyl penicillinate be given to dogs weighing less than 25 kg. each 8 hours, but at least 1 to 2 hours before feeding.

—R. N. WEAVER.

FISHER, E. W. & JENNINGS, S. (1958). **The use of fluothane in horses and cattle.**—*Vet. Rec.* **70,** 567-572 & 573. [Authors' summary modified.] **239**

General anaesthesia was carried out in 17 horses and 50 cattle by means of fluothane in a closed circle absorber. Details are given of induction with thiopentone sodium i/v or with fluothane, maintenance with fluothane, recovery from the anaesthetic, and the amount of fluothane required. A number of operations for which fluothane has been used and data relating to the anaesthesia are tabulated and four protocols are given. Fluothane anaesthesia in horses and cattle is compared with that described by other workers in man and dogs.

JENNINGS, S. (1958). **The use of β β methyl ethyl glutarimide for terminating barbiturate anaesthesia in calves.**—*Vet. Rec.* **70,** 494-495. [Author's summary.] **240**

The idiosyncrasy of calves in remaining recumbent for long periods after anaesthesia with so-called short-acting barbiturates is discussed. Matched pairs of calves were anaesthetised with barbiturates. One calf from each pair was used as a control and these slowly recovered and remained recumbent for periods of 20 to 30 hours. One calf from each pair received the barbiturate antagonist β β methyl ethyl glutarimide which terminated anaesthesia and the calves were able to stand within periods of 3½ to 12 minutes.

SANFORD, J. (1958). **The effect of analeptics on pentobarbitone anaesthesia in the cat.**—*Vet. Rec.* **70,** 592-595. [Author's summary.] **241**

Cats anaesthetised with pentobarbitone were given sodium bemegride which restored reflex responses but did not abolish the recovery period, although this was reduced to a significant extent. It is concluded that the administration of a single dose of sodium bemegride to anaesthetised cats is not a useful routine procedure. Sodium bemegride is a more potent analeptic than leptazol. Its analeptic action may be of practical value in the treatment of cats which have received an overdose of barbiturate.

See also absts. **28** (resistance of S. typhi-murium to tetracyclines); **49** (amphotericin B in experimental histoplasmosis); **62** (treatment of trichomoniasis); **66** (coccidiosis); **69** (trypaflavine and resistance to Nuttallia equi); **117-118** (parasiticides); **123, 130, 138-141, 145-146, 150, 152-153 & 155** (anthelmintics); **177** (tranquillizers for cattle and lambs); **178-180** (food supplements); **225-226** (toxicity of certain anthelmintics, parasiticides and agricultural chemicals); **233** (toxicity of pyrimethamine for chicks); **247-248** (antibiotics and anthelmintics in milk); **282** (doping of racehorses).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

FELL, C. & SEEGERS, W. H. (1958). **Platelet factor 1 related to prothrombin activation.**—*Canad. J. Biochem. Physiol.* **36,** 645-652. **242**

Platelets contained a hypothetical substance called "Platelet Factor 1" or "Platelet Accelerator", because of its ability to accelerate blood

clotting or to shorten the prothrombin conversion to thrombin. Concentrates of this platelet factor 1 were produced from bovine platelets but being bound to fine particles, activity was not obtained in solution. Activity of the concentrate was destroyed by heating at 53°C., at pH 5·2, ether extraction, drying with acetone, or by standing at -20°C. Purified prothrombin was activated by several different methods with the formation of different end-products but the platelet factor 1 appeared to accelerate alteration in the prothrombin molecule independently of these variants.—R. V. L. WALKER.

SOMERS, M. (1958). **Comparison of the salivary secretion of both parotid glands in a sheep.** —*Nature, Lond.* **182,** 400. **243**

The secretions from both parotid glands of a Merino wether were measured over 14 days; the sheep consumed normal daily rations under its accustomed environmental conditions. The mean daily volume and the total volume were practically the same for each gland.—E.V.L.

STEWART, P. B. & BURGEN, A. S. V. (1958). **The turnover of fluid in the dog's pleural cavity.**—*J. Lab. clin. Med.* **52,** 212-230. **244**

The pleural capillaries from which fluid passes to the pleural cavity, may be derived from the pulmonary circulation and may contain two types of pore; the larger pore allowing free passage of plasma protein and restricting the passage of cells and the smaller pore being impermeable to protein.

Low molecular weight substances pass rapidly in either direction between capillary blood and pleural fluid. The clearance of radiosodium and water introduced into the pleural cavity gave a lower limit of 80 ml./kg./hr. for the pleural blood flow.

Normal pleural fluid was collected. The average volume for the dog was 1·3 ml. The average protein concentration was 1·39 g./100 ml.; the r.b.c. count 6,300/cu. mm. and the w.b.c. count 2,820/cu. mm.—R.M.

MAHAFFEY, L. W. (1958). **Fenestration of the aortic and pulmonary semilunar valves in the horse.**—*Vet. Rec.* **70,** 415-418. [Author's summary modified.] **245**

Fenestration of the free edge of the cusps of the aortic and pulmonary semilunar valves appears to be common in the horse. It has been found in various age groups, including the foetus and new-born, and must sometimes be a developmental characteristic. However, the peripheral portion of the cusp, especially in the aortic valve, is always very delicate as compared with the deeper part and perforation in a purely mechanical way can probably arise easily. Unless the fenestrations are extensive and occur well in from the line closure they seem unlikely to be of clinical significance.

SMITH, R. N. (1958). **Irregular patterns of the ansa spiralis of the sheep colon.**—*Brit. vet. J.* 285-288. [Author's summary.] **246**

In a survey of the pattern of the ansa spiralis of over a thousand sheep just over two hundred were irregular in some way. Approximately a quarter of these had only the last centrifugal coil affected. It is thought that the irregularity occurs because the loops and kinks seen in early developmental stages are not removed before the ansa spiralis becomes fixed to the surface of the common mesentery.

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

HARGROVE, R. E., LEHMAN, R. J. & MATTHEWS, C. A. (1958). **Use of fluorescent materials for the indirect detection of antibiotics in milk.**—*J. Dairy Sci.* **41,** 617-623. [Authors' summary modified.] **247**

The addition of a combination of fat-soluble fluorescein and uranine, as a "marker," to penicillin preparations intended for intramammary infusion, provided a rapid and satisfactory means of detecting the antibiotic in milk. The marker was detected visually in the milk for 48 hours after treatment and with ultra-violet light for 96 hours. It was non-toxic and did not affect milk production. Statistical analysis of the data showed a close correlation between the excretion of marker and of penicillin.

ŠIBALIĆ, S. & CVETKOVIĆ, L. (1958). Promena boje mleka i mlečnih proizvoda posle lečenja ovaca fenotiazinnom. **[Effect of phenothiazine on the colour of ewes' milk and products.]** — *Vet. Glasn.* **12,** 270-274. [In Croat. Summary in French.] **248**

Milk and cheese from ewes treated with phenothiazine turned reddish to purplish after exposure to daylight and air. This was due to the presence of oxidation products of the drug, excreted with the milk for about 48 hours after administration. When this milk was mixed with milk from untreated ewes and cows it remained white. Cheese, kept in a wooden container for a period of observation of 6 months retained these oxidation products and turned pink when exposed to light and air.—E.G.

RADAN, M. (1958). **[A comparative study of the degree of bleeding in ritually and non-ritually slaughtered cattle.]** — *Refuah vet.* **15,** In Hebrew: pp. 74-76. In English: p. 97. [Author's conclusions modified.] **249**

Results of the Malachite-green test indicated that bleeding is much more complete in cattle slaughtered ritually than with the captive bolt pistol.

See also absts. **4** (faecal streptococci in man and animals); **72** (vesicular stomatitis in man); **74-79** (rabies); **103** (psittacosis in pet birds); **104** (pigeons as carriers of psittacosis); **105** (budgerigars and poliomyelitis); **112** (survival of R. burneti in cheese); **148** (ascarids in dogs and cats); **203** (wild birds as disseminators of diseases); **284** (report, Royal Veterinary College).

REPRODUCTION AND REPRODUCTIVE DISORDERS

HANCOCK, J. L. (1958). **The fertility of natural and of artificial matings in the pig.** — *Proc. Soc. Stud. Fertil.* **9,** 146-158. [Author's summary modified.] **250**

Of 157 gilts and 65 sows mated naturally 92 (58·6%) and 50 (76·9%) respectively farrowed to first service. The mean litter size for gilts was 9·0 and for sows 10·2.

Counts were made of the corpora lutea and of cleaved and uncleaved ova in sows killed 24-96 hours after mating or insemination. A total of 1,280 corpora lutea was recorded for 73 sows (mean 17·5 per sow).

Of 219 ova from 15 mated sows 91% were cleaved.

Of 240 ova from 16 sows inseminated with 150 ml. undiluted semen, 46·2% were cleaved.

Of 162 ova from 11 sows inseminated with semen diluted in seminal plasma, 22·2% were cleaved.

Of 136 ova from 11 sows inseminated with semen freshly diluted with a glucose-phosphate egg-yolk medium 47·8% were cleaved.

Of 161 ova from 12 sows inseminated with semen stored for 24 hours at 5°C. after dilution with glucose-phosphate egg-yolk medium, 21·7% were cleaved.

The differences between the four groups are not statistically significant.

More spermatozoa were found in the zonae pellucidae of ova from mated sows than in ova from inseminated sows. Of 237 uncleaved ova from inseminated pigs, 52 had spermatozoa present when recovered.

MELROSE, D. R., STEWART, D. L. & BRUCE, W. (1958). **Comparative fertility studies of bovine semen diluents containing powdered skim milk, fresh skim milk, glycine, and egg yolk.** — *Vet. Rec.* **70,** 433-438. [Authors' summary modified.] **251**

In a trial involving 10,189 first inseminations from 17 bulls, each ejaculate was divided into two equal parts, which were then mixed with a 9% skim milk powder (s.m.p.) diluent or an egg yolk–citrate (e.y.c.) diluent. Conception rates with these two diluents were 68·4% and 63·5% respectively. The higher conception rate was confined to 6 bulls, which had the lowest fertility with the e.y.c. diluent. Two of these bulls were subsequently shown to be infected with *V. fetus*. Since both diluents contained streptomycin this antibiotic appears to be more effective in milk than in e.y.c. No overall benefit resulted from increasing the conc. of the streptomycin calcium chloride in the 9% s.m.p. diluent from 500 to 1,000 μg. per ml. of diluent. When the s.m.p. diluent was used without antibiotic it gave a lower conception rate than with 1,000 μg. of streptomycin calcium chloride per ml. Bulls used in this test were free from *V. fetus*. The addition of glycine or egg yolk to the s.m.p diluent did not improve the overall conception rate, but, since these additions appeared to maintain a constant level of fertility over two days of use, these diluents could probably be usefully investigated further. No differences in conception rate were obtained when fresh and powdered skim milk diluents were compared. In *in vitro* tests, diluents prepared without previous heat treatment from 8 samples of s.m.p. allowed normal survival of spermatozoa, whilst diluents prepared from 3 other samples were rapidly toxic. But in a controlled field trial with diluents prepared from these 11 samples, no differences in conception rate were found when the diluents were heated at 92°C. for 10 min.

HICKMAN, C. G. (1958). **Spermatocrit values in facilitating the estimation of spermatozoa concentrations.** — *J. Dairy Sci.* **41,** 318-319. **252**

A special centrifuge is needed for the estimation of spermatozoa concentration in semen. Capillary tubes are partially filled with freshly collected semen, heat sealed at one end and are spun horizontally at 10,000 r.p.m. for 10 min. This will separate the spermatozoa from the seminal fluid and pack them in the sealed end of the tube. The packed spermatozoa are read off, as a percentage, against a graph supplied with the centrifuge. The advantages of this over the photoelectric method are enumerated. When many tubes are centrifuged at the same time all should be read as soon after cen-

trifuging as possible; otherwise the spermatozoa will mix with the seminal fluid again. It is suggested that this method be referred to as the "Spermatocrit method for determining spermatozoa concentration."—T.E.G.R.

VanDemark, N. L. & Couturier, L. R. (1958). **Flow dialysis as a means of preserving bovine semen at room temperature.**—*J. Dairy Sci.* **41**, 530-536. [Author's summary modified.] **253**

A flow dialysis technique was developed and used to prolong the life of bull spermatozoa at room temp. Samples of undiluted semen in dialysis sacs were suspended in constantly flowing media of egg yolk–citrate, of milk, and of blood products. Control samples of undiluted semen lived for about 24 hours in test tubes at room temp., whereas portions of the same samples undiluted survived for a week in dialysis sacs, with a yolk–citrate medium constantly passing the sacs. Survival was better with the yolk–citrate than with the other media, and was better at room temp. than at 5°C. Bubbling O_2 through the yolk–citrate medium decreased survival, whereas N_2 improved it. Results with CO_2 were highly variable. Further studies of the effects of CO_2 on bull spermatoza are in progress.

Macpherson, J. W. (1958). **Automatic glycerolization of bovine semen.**—*Canad. J. comp. Med.* **22**, 286-288. **254**

The development of equipment for automatic addition of the glycerol-containing fraction to diluted bull semen before freezing is described. The use of this method has overcome a number of difficulties encountered when large-scale processing is undertaken.

—R. V. L. Walker.

I. Dziuk, P. J. (1958). **Dilution and storage of boar semen.** — *J. Anim. Sci.* **17**, 548-553. **255**

II. Dziuk, P. J. & Henshaw, G. (1958). **Fertility of boar semen artificially inseminated following *in vitro* storage.** — *Ibid.* 554-558. [Authors' summaries modified.] **256**

I. Techniques for handling, diluting and storing boar semen are described. Several different diluents were compared in their ability to sustain motility of spermatozoa when the dilution was at the rate of 1 part of semen and 2 parts of diluent. The most satisfactory consisted of 3 g. glucose, 0·15 g. sodium bicarbonate, 30 ml. egg yolk, and 70 ml. of distilled water plus 100,000 units of penicillin and 100 mg. of streptomycin. Maintenance of motility was better in samples stored at 7°C. than in those stored at 16°C.

II. Sows and gilts were artificially inseminated with semen which had been stored at 7°C. in an egg yolk–glucose–sodium bicarbonate diluent for various lengths of time. Conception rates for fresh semen, and semen stored for 1, 2 and 3 days were 56% and 55%, 5% and 42%, respectively. Number of foetuses and embryonal mortality were normal in those cases in which fresh and day-old semen was used. Early embryonal mortality increased when the semen inseminated had been stored for 3 days.

Stratman, F. W., Self, H. L. & Smith, V. R. (1958). **Fertilization rates obtained with boar semen stored for zero and twelve hours.**—*J. Anim. Sci.* **17**, 598-603. **257**

Twenty pairs of gilts were artificially inseminated with fresh semen or semen stored for 12 hours. There were no significant differences among boars, among ejaculates from individual boars or between fresh semen and semen stored for 12 hours. The percentage of fertile ova resulting from insemination with fresh semen was 76·9% as compared to 83·6% for stored samples, while the average conception rate was 90% and 95% respectively.—R.M.

Krishna Rao, C. (1958). **Studies on the morphology and development of the spermatozoa of farm animals.**—*Indian vet. J.* **35**, 268-280. [Author's summary modified.] **258**

The morphological changes undergone by spermatozoa of the following species during their passage from the testis to the ampulla were studied in the horse, donkey, sheep, goat, buffalo, pig, fowl, turkey, duck and pigeon. The spermatozoa of all mammals studied could be easily distinguished by the shape of the head, which was broad and flat. The spermatozoa of the birds studied were very similar in appearance and only differed in size. The head is cylindrical and of uniform thickness tapering to a hard, needle-like process anteriorly; it is attached by a very narrow, inconspicuous and apparently inflexible neck to the short connecting piece. The chief piece of the avian spermatozoon was much longer than that of the mammalian spermatozoon.

The cytoplasmic drop was associated with the development of the spermatozoon of the mammals studied; no analogous structure was demonstrable on the avian spermatozoon. The descent of the drop appeared to be controlled by internal factors, such as aging of the spermatozoon, rather than by the epididymal secretions. Spermatozoa with posterior drops can be

considered physiologically mature and morphologically normal, those with anterior drops should be considered immature and abnormal. The cytoplasmic cap was found on the spermatozoa of all the mammals studied, being best developed in the pig. It is demonstrable by differential staining. It is considered that the anterior pointed process on the head of avian spermatozoa corresponds to the cytoplasmic cap of mammalian spermatozoa.

FREUND, M. (1958). **Collection and liquefaction of guinea pig semen.**—*Proc. Soc. exp. Biol., N.Y.* **98,** 538-540. [Author's summary modified.] **259**

The technique and apparatus for electro-ejaculation in g.pigs, the semen coagulum or "vaginal plug", and the coagulation process are discussed. Proteolytic enzymes were tested for liquefying activity and 0·1% chymotrypsin resulted in consistent liquefaction and good motility. Mean ejaculate volume was 0·5 ml. and mean motility at 39°C. was 51%. There was no evidence of gross morphological or histological changes in the reproductive system of g.pigs from which semen was collected at fortnightly intervals.

MÜLLER, B. (1958). Ein Fall von Samenstauung beim Bullen. **[Seminal congestion in a bull.]** — *Zuchthyg. FortpflStörung. u. Besamung* **2,** 155-159. **260**

Scrotal pain and swelling were evident soon after 4 heifers had been served. The head of one epididymis was palpably enlarged. Ejaculated spermatozoa were immotile. At P.M. examination the epididymes contained fluid under pressure. Foci of inflammation were evident throughout the scrotal connective tissue. The case was thought to be similar to Löliger's spermatic granuloma in goats [*V.B.* **27,** 2602 and **28,** 1335]. No organisms could be recovered and the aetiology remains obscure.

—F. L. M. DAWSON.

CRAIG, A. W., FOX, B. W. & JACKSON, H (1958). **Sensitivity of the spermatogenic process in the rat to radiomimetic drugs and X-rays.**—*Nature, Lond.* **181,** 353-354. **261**

Exposure of male rats to 200 r. of whole body X-irradiation caused a reduction in the average litter size resulting from mating during the fourth and fifth weeks after exposure, but there was no noticeable oligospermia. Exposure to 500 r. had the same effect, followed by sterility in the seventh week. The onset of sterility was accompanied by pronounced oligospermia, and the sterility persisted for at least 3 months. Comparison of these findings with those reported for mice suggests that the spermatogonia and spermatocytes of mice are more sensitive to irradiation than those of rats, and/or that the time for spermatozoa to develop and to appear at coitus is shorter in mice than in rats.

Trials with radiomimetic drugs in male rats showed that the stage of spermatogenesis most susceptible to triethylenemelamine corresponds to a period of sterility in the fourth week after a dose (0·2 mg./kg. i/p). Busulphan (10 mg. per kg.), on the other hand, did not cause sterility until the eighth week after i/p administration.—M.G.G.

MACMILLAN, E. W. (1958). **The mechanical influence of the vasa efferentia on the transport of radiopaque medium through the ductus epididymidis of the rat.**—*Proc. Soc. Stud. Fertil.* **9,** 65-71. [Author's summary modified.] **262**

At operation in 15 mature rats selected at random 0·05 ml. of 50% barium sulphate suspension was introduced through the rete testis into the vasa efferentia both on the right and left sides.

At a second-stage operation after five hours (by which time the medium lies close to the tip of the head in the medial limb of the caput flexure) the terminal efferential tubule on one side is divided between ligatures.

Despite the unilateral exclusion of the stream of spermatozoa issuing from the efferential system there was no significant alteration in the rate of flow of the medium through the head, body and tail of the epididymis as between the operated and the control sides.

The operation, although designed to exclude the influence of the testis and its efferent ductules on the stream of spermatozoa through the ductus epididymus, does not exclude a mechanical contribution from the initial segment.

The transport of spermatozoa in the rat occurs in a series of stages, each with its own time factor and its own mechanism of propulsion. Their functional implications and hormonal relationships require further investigation.

WILTBANK, J. N. & COOK, A. C. (1958). **The comparative reproductive performance of nursed cows and milked cows.**—*J. Anim. Sci.* **17,** 640-648. **263**

The reproductive efficiency of cows milked twice daily is considerably better than that of cows suckling calves.—R.M.

SCOTT, M. G. & SCOTT, P. P. (1958). **Some factors affecting the maturation of the reproductive organs of the cat.**—*Proc. Soc. Stud.*

Fertil. **9**, 72-89. [Authors' summary modified.] **264**

A comparison was made of the weights and histological appearances of the genital organs of healthy cats with those showing subnormal growth, due to infections (respiratory and enteric), or to malnutrition. The animals were bred and maintained in the laboratory.

In pre-puberal kittens with chronic infections and malnutrition, growth of the gonads was retarded to about the same extent as general body growth. The secondary sex organs, epididymis and uterus, were retarded to a greater degree than the gonads. This was associated with atrophy of Leydig cells in the testes and failure to develop Graafian follicles with antra in the ovaries, leading to a diminished output of testosterone and oestrogen respectively.

In chronically infected adults regression or atrophy of the gonads occurred. In severe infections and malnutrition abnormal cell divisions, with the formation of giant multi-nucleate cells in the testis and arrest of spermatogenesis occurred in the adult male. Ovarian cysts appeared in females with acute enteritis.

The effects of infection and malnutrition on the genital organs could be reversed by appropriate treatment with antibiotics, or by feeding malnourished cats on the stock diet.

Evidence was brought forward suggesting that the atrophy of the gonads of subnormal animals was due to failure of the pituitary to maintain a sufficient output of gonado-trophic substances under conditions of malnutrition or infection, especially of chronic infection. The atrophy of the secondary sex organs was consequent on this primary lesion.

WINTER, H. (1958). **Persistent right oviducts in fowls including an account of the histology of the fowl's normal oviduct.**—*Aust. vet. J.* **34**, 140-147. **265**

Some development of the right oviduct occurred in over 80% of 382 birds of a flock of Australorp fowls. A similar incidence was found in a smaller sample from a poultry abattoir.

—A. W. BLACKSHAW.

REUBER, H. W. (1958). **Effects of diethylstilbestrol feeding on the bovine reproductive tract.** — *Amer. J. vet. Res.* **19**, 585-590. [Author's summary modified.] **266**

Three groups of 6 yearling heifers were each fed 0, 10 or 20 mg. of stilboestrol daily in a fattening ration. Their heat periods were recorded. After 148 days, 3 heifers from each group were slaughtered, and the remainder placed with a virile bull. When these heifers were slaughtered, 91 days later, they all carried normal embryos. The stilboestrol had no effects on the oestrous cycles or on conception.

Three groups of heifer calves were each fed 0, 5, or 10 mg. of stilboestrol daily in a growing-fattening ration. Low feed intakes, due in part to individual twice daily feeding, resulted in small gains in the five-month feeding period. Stilboestrol treatment appeared to hasten and accentuate the onset of puberty; no deleterious side effects were noticed.

Three groups of bull calves were similarly fed and managed. Again, the individual feeding resulted in low feed consumption and poor gains. No effects attributable to stilboestrol treatment were observed in behaviour, testicular size, or in fertility as measured by semen quality.

EDGAR, D. G. (1958). **The induction of ovulation and oestrus in ewes during anoestrus.**—*Proc. N. Z. Soc. Anim. Prod.* **18**, 97. Discussion: pp. 97-98. [Author's abst.] **267**

Several different treatments by injections of progesterone followed by pregnant mare serum (P.M.S.) have been tested for inducing ovulation and oestrus in anoestrous Romney ewes.

The simplest and most effective treatment was three injections of 30 mg. progesterone followed by one of 1,000 i.u., P.M.S., all at two-day intervals. Of 25 anoestrous ewes, 17 were marked by a teaser ram, and 11 lambed to artificial insemination.

A small percentage (10%) of a group of ewes similarly treated shortly after lambing, lambed again within six months.

Rectal electrical stimulation caused ovulation and oestrus in five of six Romney ewes early in anoestrus. The effect of this treatment was progessively reduced in other ewes with the advance of the non-breeding season.

HANNAN, J. (1958). **An aspect of sheep production. Fecundity of the ewe.**—*Irish vet. J.* **12**, 126-131. [Author's summary modified.] **268**

Some factors influencing the fertility of the ewe are reviewed. In a small-scale experiment treatment of oestrous ewes with progesterone and serum gonadotrophin resulted in an increase of 17% in the lambing rate and more concentrated lambing periods.

WRIGHT, A. A. (1958). **The excretion of steroids by animals.**—*Vet. Rec.* **70**, 662-666 & 669. [Author's summary.] **269**

The excretion of steroids by the mare, cow,

and goat is described. Considerable species differences are shown.

The importance of faecal excretion in the cow is suggested.

Some methods of steroid estimation are discussed in relation to the known constituents of animal urines.

SINDELIĆ, V. & PETROVIĆ, B. (1958). Slučaj oligospermije bika lečen ultrazvukom. [**Oligospermia in a bull; treated with ultrasonic waves.**]—*Vet. Glasn.* **12,** 545-547. [In Croat.] **270**

Successful treatment of oligospermia in a bull was claimed by exposure of the scrotum and and lumbosacral region to ultrasonic waves for 3 min. The scrotum was at first treated through a plastic bag containing water, later by direct contact with the head of the vibrator.—E.G.

DAWSON, F. L. M. (1958). **The diagnosis and significance of bovine endosalpingitis and ovarian bursitis.** — *Vet. Rec.* **70,** 487-493. [Author's summary modified.] **271**

Of 252 cows discarded for failure to breed and studied at first clinically and then P.M., 40 had bilateral bursitis, and 43 unilateral bursitis. The diagnosis of bursitis *per rectum* by Murray's technique was 97-98% accurate, for both affected and unaffected animals. A further 46 cows with normal bursae proved, on histopathological evidence, to have endosalpingitis probably severe enough to inhibit the function of one or both of the tubes. Thus 51·5% of the total had either bursitis or endosalpingitis.

The evidence suggests ascending infection after trauma at parturition as the most important cause of these conditions. 75% of cases of bilateral and 58% of cases of unilateral bursitis had endosalpingitis also. In 12 unilateral cases and in 18 with normal bursae, both oviducts appeared blocked; there were thus 70 cases of blocked oviducts not apparent clinically, including the cases of bilateral bursitis, or 28% of the total.

These figures are irrespective of the incidence of severe endometritis, which independently probably rendered 63% of the 129 cows with tube infection incapable of breeding. A further 9% with relatively normal uteri had both tubes apparently non-functional, and 11% had only unilateral persistence of function.

Among the bursitis cases, it appeared possible to restore bilateral function to 19% (40% of those with uteri approximately normal) and unilateral function to a further 7% by manual rupture of adhesions, which would have been practicable during life, so that a roughly equal proportion only might benefit should a suitable plastic operation be developed.

Fluid injection tests practised P.M. appeared efficient in demonstrating the patency of tubes microscopically normal, but indicated blockage in only 35% of the tubes which in sections appeared impassable to ova. In a few cases the tests indicated a blockage which was not apparent in sections prepared from those tubes which did, however, seem abnormal. This disparity is attributed to the failure of scar tissue to prevent the passage of fluid. The prospect, therefore, that a satisfactory direct test for tubal patency may shortly be evolved appears doubtful, but analysis of the mean length of intervals between services since last calving provides an indirect substitute for a patency test.

GEE, R. W. (1958). **The occurrence and treatment of foetal mummification in the bovine.** —*Aust. vet. J.* **34,** 256-258. [Author's summary modified.] **272**

23 cases of mummified foetus in bovines are discussed. In 8 out of 10 cases treated with oestradiol monobenzoate sufficient dilatation of the cervix was obtained for expulsion of the mummified foetus. A higher than normal incidence on some properties is described.

ASHDOWN, R. R. (1958). **Aplasia segmentalis ductus wolffii: a report of two cases in British Friesian bulls.** — *Vet. Rec.* **70,** 467-469. [Author's summary.] **273**

The anatomical abnormalities found in two cases of segmental aplasia of the Wolffian ducts are described. One case was bilateral, affecting epididymides and vasa deferentia and causing aspermia of the ejaculate. In the other only the right epididymis, vas deferens, and ampulla were affected and the ejaculate was of good quality. All affected testes showed degenerative changes. The condition is considered identical to that previously described in Denmark and the importance of clinical examination in diagnosing the disease is stressed in view of its probable hereditary nature.

See also absts. **27** (S. infantis from an aborted bovine foetus); **40** (bovine foetal leptospirosis); **53** (flora of bull semen); **59-63** (trichomoniasis); **73** (rabies after parturition in a cow); **158** (oestrogens and breast cancer); **296** (studies on fertility).

ZOOTECHNY

FERGUSON, K. A. (1958). **The influence of thyroxine on wool growth.**—*Proc. N. Z. Soc. Anim. Prod.* **18,** 128-140. Discussion: pp. 160-164. [Author's summary modified.] **274**

Wool growth, feed intake and body weight responses to increasing doses of monosodium-*l*-thyroxine were observed.

Thyroxine treatment caused an increase in feed intake necessary to maintain body weight. The increase in feed intake was not sufficient to prevent decreases in body weight relative to untreated sheep.

Increase in wool growth could be attributed to the extra nutrients supplied by the increase in appetite and by the decrease in the storage of protein in body tissues.

The net efficiency of wool growth was found to decline with thyroxine treatment, probably because of an increase in the crude protein maintenance requirement with metabolic rate.

The results do not support the view that thyroxine has more than a permissive role in determining the normal wool growth rate of a sheep. The commercial use of thyroxine treatment in wool production is discussed.

ROSS, D. A. & LEWIS, K. H. C. (1958). **The effect of thyroxine on the Romney two-tooth.** —*Proc. N. Z. Soc. Anim. Prod.* **18,** 141-152. Discussion: pp. 160-164. [Authors' summary.] **275**

The implantation of Romney two-tooth ewes with 90 mg. of *l*-thyroxine 20 days before mating resulted in a delay in the rate of conception of the treated sheep and an increase in the proportion of barren ewes. No effect was found on the growth rate of the lambs.

In the four months following implantation, there were considerable increases in greasy and clean wool production, staple length and number of crimps per inch, while there was a slight decrease in fibre diameter.

An increase of 3·6% was found in greasy fleece weight, while no difference in style grading or the number of faulty fleeces was noted. The staple strength of the treated group was about 20% above that of the controls.

SLEN, S. B. & CONNELL, R. (1958). **Wool growth in sheep as affected by the administration of certain sex hormones.**—*Canad. J. Anim. Sci.* **38,** 38-47. **276**

Oestradiol given intramuscularly reduced the weight of clean wool and fibre length; this is believed to be the result of lowered thyroid activity with adrenal cortical stimulation. Diethylstilboestrol given orally produced the same general effects as oestradiol but to a lesser degree. Single implants of 12 mg. did not affect wool growth, but a second implant after three months decreased the average weight of clean wool. Weight of clean wool increased when sheep were treated with relatively high doses (175 mg.) of testosterone followed by lower doses (75 mg.). In another experiment using 125 mg. a head, no response in wool growth was observed and there was some indication of increased thyroid activity suggesting that the dosage of testosterone was at the lower threshold level for wool growth. The intramuscular administration of progesterone did not affect wool growth.—R. V. L. WALKER.

SCHINKEL, P. G. (1958). **The relationship of lamb birthcoat to adult fleece structure in a strain of Merino sheep.**—*Aust. J. agric. Res.,* **9,** 567-578. **277**

In a flock of strong-wool South Australian Merino sheep 511 lamb birth-coats were classified into 6 grades of coarseness [*V.B.* **26,** 1056] and related to adult fleece characteristics (at approx. 15 months). Coarse birth-coats were associated with decreased number of crimps an inch and increased variability of fibre diameter in adults. The latter was shown from skin sections to be due to a significant increase in diameter of primary (P) fibres and a small, non-significant decrease in diameter of secondary (S) fibres. No relation was found between birth-coat grade and body wt., clean fleece wt., yield, staple length, follicle density, follicle ratio, mean fibre diameter or skin folds. A gene system controlling productivity of follicle types without affecting overall follicle productivity is postulated. Increasing "dosage" of genes increases productivity of P follicles and decreases that of S follicles, causing increased halo-hair abundance in lambs and increased differences between P and S fibre diameters in adults.

—M. H. HARDY.

MURLEY, W. R. & CULVAHOUSE, E. W. (1958). **Open shed and portable pens versus conventional housing for young dairy calves.** — *J. Dairy Sci.* **41,** 977-981. [Authors' summary modified.] **278**

122 female calves reared from 3 days of age to 16 weeks, either in conventional barns, in open sheds, or in portable pens showed no advantage of one type of housing over another in growth of the calves. Exercise in yards from 2 to 4 months of age was of no apparent value as compared to confinement in individual pens. Calves given oxytetracycline had greater body

weight during the first 8 weeks, during which time the antibiotic was fed, irrespective of type of housing. This accelerated rate of gain did not persist after antibiotic feeding ceased and at 16 weeks of age no differences in rate of gain were evident. The mean temperature and relative humidity in the conventional barns were slightly higher than in either the open sheds or the portable pens. Calves housed in the portable pens consumed slightly more hay than those in the conventional barn, but consumption of meal and milk were similar.

TECHNIQUE AND APPARATUS

HANKS, J. H. & WALLACE, J. H. (1958). **Determination of cell viability.** — *Proc. Soc. exp. Biol., N.Y.* **98,** 188-192. [Authors' summary.] **279**

Differentiation between life and death in unicellular beings should be based upon criteria which are more convenient and fundamental than measurements of capacity for growth. The principle of ion (eosin) exclusion has been substantiated as a simple, rapid test for this purpose. The conditions for valid observations in cell and tissue cultures have been delineated in respect to: eosin, serum and electrolyte concentrations. These simplified methods have replaced cultivation procedures in studies on: the effects of exposure to pancreatin and to drying, and the exposure of sensitive cells to tuberculin; storage of stock suspensions of cells without renewal of medium; and use of such methods for investigating nutritional or metabolic requirements.

BARNES, C. M. & JULIAN, L. M. (1958). **A technique for the intravenous injection of embryonating eggs.**—*Amer. J. vet. Res.* **19,** 759-760. [Authors' summary modified.] **280**

A technique for injections into the chorioallantoic vessels of embryonating eggs, using a simple egg-holding device, is described.

CUNNINGHAM, H. M. (1958). **Inflatable plug for reticulo-omasal orifice and equipment for saliva collection from fistulated steers.** — *Canad. J. Anim. Sci.* **38,** 85-86. **281**

A removable inflatable plug is described for replacement in the reticulo-omasal orifice and and oesophagus for use in "isolating" the rumen repeatedly without anaesthesia or injury. Also described is an inflatable rubber catheter fastened in a polyethylene tube for passage through the nares, which provides an unimpeded flow of air through the equipment to facilitate quantitative collection of saliva.

—R. V. L. WALKER.

See also absts. **45** (cultivation of Clostridium); **47** (analytical electrophoresis of bact. extracts); **83** (infectious bovine rhinotracheitis study in tissue culture); **84** (study of louping-ill virus in tissue culture); **96** (growth of fowl plague virus in tissue culture); **207** (methylene-blue kidney function test).

MISCELLANEOUS

MARES, R. G. (1958). **The doping of race horses. A survey of some existing information and some personal experiences.**—*Brit. vet. J.* **114,** 288-294. [Author's summary modified.] **282**

The doping of racehorses is considered under the following headings: history, definition, methods, dangers, detection and control.

WALKER, R. G. & REX, M. A. E. (1958). **Cardiac arrest and its treatment.**—*Vet. Rec.* **70,** 667-668. [Authors' summary modified.] **283**

The causes of cardiac arrest are briefly mentioned. The history and technique of cardiac massage is outlined. Successful treatment of cardiac arrest in a cat is described.

REPORTS

GREAT BRITAIN. (1957). **Royal Veterinary College, (University of London). Annual Report 1st October 1956 to 30th September 1957.** pp. 45. London: Taylor & Francis Ltd. **284**

Sixty-six new students were admitted to the College in 1956 for the degree of B.Vet. Medicine and five to complete their M.R.C.V.S. course under Byelaw 95. The total number of students was 342. In addition 14 graduate students were enrolled to read for the Ph.D. degree and seven for short courses.

Fifteen candidates obtained the B.Sc. (Veterinary Science) degree of the University of London and 30 students qualified for and obtained the M.R.C.V.S.

The report deals with the following Departments of the College:—Medicine, Surgery and Obstetrics, Pathology, Veterinary Hygiene and Animal Husbandry, Physiology and Anatomy. Reports on the Wallingford practice and the Beaumont Animals' Hospital are included.

The work of each Department is described

under the headings: Staff, accommodation, teaching, research, advisory work, routine services, and general. Research in the various departments covers a wide range of subjects and no less than 79 papers were published.

—D. S. RABAGLIATI.

REPUBLIC OF IRELAND. (1957). **Twenty-sixth Annual Report of the Ministry of Agriculture, 1956-1957.** pp. 82. Dublin: The Stationery Office. 7s. 6d. [Veterinary College. pp. 30-37. Veterinary Research Laboratory. pp. 70-80.] **285**

For the opening session of the College 205 students including 43 freshmen were in attendance.

In the Histological Department experimental biological work with radioactive isotopes was carried out. Small-scale therapeutic uses of such isotopes were investigated. An investigation was planned as to the possible therapeutic uses of radioactive isotopes in leucaemia in fowls and in certain other conditions in mammals.

In the Pathological Section P. M. examinations made and specimens examined numbered 1,818.

The Clinical Department dealt with 6,498 day patients, 392 outpatients and 694 hospital cases.

In the Veterinary Research Laboratory research in Oedema disease in pigs was continued and is now drawing to a close. The production of a serum and a vaccine would appear to be a practical proposition in the near future. The work of the Laboratory is summarized under ten headings.

In the General Diagnostic section 720 specimens were received from Local Authorities for diagnosis for TUBERCULOSIS, of which 535 were positive. Out of 701 milk samples 2·56% contained tubercle bacilli. In the Calf Disease section the research was mainly on CALF SCOURS.

It was shown that the prophylactic administration of antibiotic feed supplements prevented disease. Of 37 calves received for P. M. examination *Escherichia coli* infection was diagnosed in 14.—D. S. RABAGLIATI.

I. WESTERN AUSTRALIA. (1957). **Annual report of the Department of Agriculture for the year ended 30th June, 1956.** pp. 26. Perth: W. H. Wyatt, Govt. Printer. **286**

II. WESTERN AUSTRALIA. (1958). **Annual report of the Department of Agriculture for the year ended 30th June, 1957.** pp. 50. Perth: A. B. Davies, Govt. Printer. **287**

I. In tuberculin tests in 302 dairy herds containing 17,936 cattle, there were 1·13% positive reactors. Active measures for the eradication of FOOT ROT in sheep have continued with promising results; the Geraldton district has been freed from infection.

Brief reference is made to the progress of investigations of PHOSPHORUS DEFICIENCY in dairy cattle and URINARY CALCULI and LUPINOSIS in sheep.

II. In tuberculin tests in 289 herds containing 17,477 cattle, there were 0·82% positive reactors; 288 herds were free from infection.

SALMONELLOSIS in sheep has been more severe than usual. PULLORUM DISEASE: there were only 0·22% positive reactors in 133,960 birds. There were no reported occurrences in chickens.

Bovine BRUCELLOSIS is controlled by Strain 19; 19,875 heifers in 1,430 herds were vaccinated.

ENTEROTOXAEMIA was prevalent. BOTULISM caused heavy mortality in wild duck and other water fowl. The source of infection was probably decaying vegetation or carrion near a lake with low water levels, during the summer months. Excellent progress has been made in the control and eradication of FOOT ROT in sheep; 113 properties were freed and only 87 remain under quarantine. The Geraldton district remains clean and at Bridgetown only 20 of the 189 properties, originally affected, are yet to be released.

MYCOTIC DERMATITIS has become a serious problem. The unusually high incidence and active development of lesions during the dry summer months appears to be associated with the use of newer types of dips. The causal organism has been studied.

VIRUS PNEUMONIA continued to be a major source of loss to the pig industry.

ITCH MITE (*Psorergates ovis*) INFESTATION has greatly increased, the higher incidence being undoubtedly related to the change from arsenical dips to the newer insecticides.

A disease of lambs due to *E. coli* was investigated. The investigations of URINARY CALCULI, NEONATAL LAMB MORTALITY and LUPINOSIS are being continued.

Long-term investigations have shown the value of phosphorus supplementation for maintenance of high milk yield and butter-fat production in dairy cows. Studies regarding the storage of copper in ducks and fowls have been carried out as part of a large programme designed to throw light on the anomalous process of copper metabolism in sheep as compared with all other species. Co-operative work concerned with the attempted isolation of a new oestrogenic substance from subterranean clover has been continued.—H. W. BENNETTS.

FEDERATION OF RHODESIA AND NYASALAND. (1957). **Report of the Secretary to the Federal Ministry of Agriculture for the year ended 30th September, 1956.** [CORRY, J. R.] pp. 167. Salisbury: Government Printer. 10s. 6d. **288**

The report of the veterinary services is in three parts, that of the Director of Veterinary Services, that of the Assistant Director (field) and that of the Acting Assistant (Research). The authorized establishment of professional officers (field and research) was increased from 27 to 36. There were, however, 13 vacancies, nine in the field and four in research. It was only possible to recruit four. It was hoped that the private veterinary practitioners, acting on their own under the Government scheme, would reduce the calls on the professional staff. This was not so, as the conditions they brought to light necessitated further investigation by the field and research staff.

Continued vigilance and control of the tick population are essential if the cattle industry is to progress and disease be kept under control. During the year 47,126 cattle were treated for TRYPANOSOMIASIS. The total confirmed cases dropped to 198.

The country has been comparatively free from FOOT AND MOUTH DISEASE, only one small outbreak occurring. The virus was typed as S.A.T.2. A total of 52 cases of RABIES occurred of which two were in human beings. The Department is doing its best to eradicate the disease by vaccination and other means, but without public support the disease must last for some years.

During the year, 139,545 cattle, 67,971 pigs and 12,199 sheep and goats were slaughtered, a considerable reduction of all classes compared with the previous year. The reason for this is not clear. The Veterinary Research Service dealt with diagnosis, preventive and curative methods, the issue of vaccines and remedies, and with artificial insemination, investigation and research.—D. S. RABAGLIATI.

NORTH BORNEO. (1956). **Annual report of the Department of Agriculture for the year 1956.** [BERWICK, E. J. H.] pp. 46. Jesselton, North Borneo: Govt. Print. Dept. [Items of veterinary interest pp. 28-35.] **289**

In buffaloes the major problem is the control of *Ascaris vitulorum* in calves, which causes 80% of calf deaths. Chenopodium has been used with some success. In abattoirs, adult buffaloes and cattle are not found to harbour *Ascaris* and no single specimen has been recovered from an adult.

Pasteurella has been isolated from individual cases in buffaloes and cattle.

The vaccination of poultry against NEWCASTLE DISEASE and FOWL POX has become the most important single activity of the veterinary branch.

SURRA has been a cause of trouble amongst ponies. It is considered that when the last of the old surra cases is destroyed (at the beginning of the year there were 29 cases in the Colony) the Colony will be considered free from surra and further work on it will be in abeyance.

The starting of a Veterinary Laboratory Service has been a most important development. Its objects are fourfold; it is hoped to develop an investigation service, a diagnostic service, to test the efficiency of control measures and to train junior staff in the collection of material for the laboratory.—D. S. RABAGLIATI.

BAHAMAS. (1957). **Annual report of the Agricultural and Marine Products Board for the year ending 31st December, 1956.** pp. 32. [Report of Government Veterinary Surgeons (LEAM, G.) Appendix A.] **290**

With regard to the livestock industry in the Colony it is becoming more important to have greater legislative powers to control and eradicate any contagious disease that may endanger the herds in the islands. A new Animal Disease Act is, therefore, being drafted.

Importations of livestock from other than the American mainland are very carefully scrutinized before stock are allowed in.

All importations of cattle from America bear certificates of negative reactions to the tuberculin test and the agglutination test for brucella, both carried out within 30 days of departure, plus a general health certificate within 24 hours.

An outbreak of FOWL POX was thought to have arisen from birds imported from the U.S.A. No vaccination was used but the outbreak was finally controlled.

No case of EQUINE ENCEPHALOMYELITIS occurred; the greatest equine toll being from sporadic TETANUS. No disease of economic or contagious nature occurred amongst cattle.

A severe outbreak of SWINE FEVER was dealt with by vaccination and general control measures. Its origin was thought to be due to imported pork products (probably from the U.S.A.) which had been fed uncooked to native pigs.—D. S. RABAGLIATI.

UGANDA PROTECTORATE. (1957). **Annual report of the Department of Veterinary Services and**

Animal Industry for the year ended 31st December, 1956. [RANDALL, J. B.] pp. 74. Entebbe: Govt. Print. Shs. 3/25. **291**

The year was a good one for livestock and no major epidemics occurred. In 1956 the census showed 3,232,000 cattle, 3,918,000 sheep and goats, almost a million more cattle than ten years ago.

The Government retains control, free of charge, of RINDERPEST, BOVINE CONTAGIOUS PLEUROPNEUMONIA, RABIES in proclaimed rabies areas, and under certain conditions ANTHRAX as a public health measure. Minor outbreaks of BLACKLEG, HAEMORRHAGIC SEPTICAEMIA, ANTHRAX, and FOWL TYPHOID were controlled by free vaccination. Mass vaccination of dogs with avianized rabies vaccine was continued in proclaimed areas.

Parasitic diseases of cattle, sheep and goats are widespread and a large proportion of calf mortality is due to PARASITIC GASTRO-ENTERITIS and COCCIDIOSIS. FASCIOLIASIS is becoming increasingly important.

During the year the Animal Research centre has undergone considerable change. Research was carried out on MASTITIS, BRUCELLOSIS, SALMONELLOSIS, diseases of poultry, helminthology, virus diseases, environmental physiology, animal genetics, nutritional chemistry, pastoral agronomy and entomology.

The report is illustrated by 16 excellently reproduced plates.—D. S. RABAGLIATI.

BOOK REVIEWS

CLIFTON, C. E. [Professor of Medical Microbiology, Stanford University.] (1958). **Introduction to the bacteria.** pp. xiv+558. New York (Toronto & London): McGraw-Hill Book Company, Inc. 2nd Edit. 58s. **292**

Professor Clifton is to be congratulated in bringing together so much fundamental knowledge regarding the study of bacteria and fungi. The book is intended to be an introduction to general bacteriology and covers a very wide field including the study of the morphology, nutrition and variation of bacteria, viruses and fungi as well as soil and industrial microbiology. The information is well presented, clear and up to date. The illustrations have been chosen with care and at the end of each chapter there is a short bibliography for those wishing more detailed information. The chapters dealing with the microbiology of infectious diseases in man, animals and plants are of necessity much condensed but do give concise and valuable information. In particular, those parts of the book dealing with the classification of bacteria and fungi are important features and, it is felt, fill a serious gap in the teaching of bacteriology and help the student to see bacteria in relation to other micro-organisms and not only as disease-producing agents.—W. J. BRINLEY MORGAN.

ROLLE, M. (1958). Mikrobiologie und allgemeine Seuchenlehre. Lehrbuch für Tierärzte und Studierende der Tiermedizin. [**Text-book of microbiology and general epidemiology for veterinary surgeons and students.**] pp. xi+448. Stuttgart: Ferdinand Enke Verlag. 2nd revised Edit. DM 46. **293**

This edition has been enlarged by the inclusion of more recent information, particularly in the fields of bacteriology and mycology, and an improvement on the previous edition [*V.B.* **20,** 1837] is the revised layout into a general and a special part.

The general part incorporates sections on nomenclature of micro-organisms (containing chapters on structure, mutations, multiplication, spore formation, motility, biochemistry, role in nature, symbiosis and antibiosis), infection (including chapters on susceptibility and resistance, incubation period, host reaction etc.), immunity (with chapters on natural and acquired immunity, allergy and anaphylaxis, and curative and preventive vaccination), chemotherapy, diagnosis, and control of infectious diseases.

Characteristics of the more important bacteria and bacterial diseases are described in about 120 pages of the special part. Rickettsia are classed with the bacteria and take up about a page and a half. Fungi are dealt with in 10 pages, viruses and virus diseases 90, and protozoa nearly 130 pages. There is an appendix dealing with bovine contagious pleuropneumonia, contagious agalactia of sheep and goats, infectious synovitis of chicks, chronic respiratory disease in fowls, equine periodic ophthalmia, bovine malignant catarrh, and purpura haemorrhagica in horses.

There are 105 illustrations and 31 tables. Bibliographical references at the end of the book number 353 and there is an adequate subject index. Paper, print and binding are excellent.

—E.G.

ALSTON, J. M. & BROOM, J. C. (1958). **Leptospirosis in man and animals.** pp. xii+367. Edinburgh (& London): E. & S. Livingstone Ltd. 40s. **294**

This book brings together in an orderly

fashion much of the great volume of information which has accumulated in the past 41 years since the cause of Weil's disease in man was first elucidated.

The morphology, classification, physiology and distribution of leptospires are dealt with in Section I, which includes a most useful table showing the serological relationships of 39 different serotypes. Section II contains 15 chapters mainly concerned with the disease in man but also dealing with laboratory diagnosis.

Section III contains three chapters on various aspects of the disease in domestic animals and some wild animals, and Section IV consisting of one chapter gives an interesting account of the geographical distribution. There is an appendix giving details of culture media and laboratory techniques. An excellent bibliography and subject and author indexes add to the value of the book.

Some books which in their titles contain the words ". . . in man and animals" have proved very disappointing to the veterinary reader but that is definitely not the case in this book which can be recommended with confidence to veterinary surgeons. It is well illustrated and very well produced.

BRANDLY, C. A. & JUNGHERR, E. L. [Edited by.] (1958). **Advances in veterinary science. Vol. IV.** pp. xi + 414. New York (& London): Academic Press Inc. $12.00 (86s. U.K.) **295**

The new (4th) volume of "Advances in Veterinary Science" is on the same lines as the previous issues. The subjects dealt with are quarantine, radiation injury, X-ray therapy, heredity and disease, infectious diseases of sheep, porcine rhinitis, virus pneumonia and Glässer's disease of pigs, toxicity of parasiticides and weedkillers, leptospirosis and Johne's disease. The authors come from Austria, Canada, England, Israel and Sweden as well as from the U.S.A.

The article by Todd, F. A. dealing with the danger of importation of disease will without a doubt be of great value to all veterinary public health officials and of interest to a much wider audience. Trum, B. F. and Rust, J. H. contribute a very topical account of radiation injury in animals. The review of X-ray therapy in veterinary medicine will interest particularly small-animal practitioners: this is contributed by the late A. Pommer of Vienna.

Stormonts' article on genetics and disease deals mainly with lethal and semi-lethal defects with brief mention of the possible wider application of genetics to the breeding of animals resistant to infective diseases. Marsh, within the space of 35 pages, deals with infective diseases of the sheep whether caused by bacteria, viruses, rickettsia or protozoa. Gwatkin gives a balanced summarization of present views on porcine rhinitis. The late Professor Hjärre deals with two diseases of pigs of considerable topical interest, namely virus pneumonia and Glässer's disease. Hole gives an appreciation of the very intractable Johne's disease problem. Van der Hoeden deals with the epidemiological aspects of leptospirosis and gives a useful table of wild animal vectors. Radeleff, in nine pages, gives a succinct account of poisoning by the newer parasiticides and weedkillers.

The whole forms a most useful source of ready information on the recent developments.

HARRISON, R. G. [Edited by.] (1958). **Studies on fertility. Including papers read at the Conference of the Society for the Study of Fertility, Exeter 1957, being Volume IX of the Proceedings of the Society.** pp. x + 169. Oxford: Blackwell Scientific Publications. 25s. **296**

This ninth volume of Proceedings consists of 15 original papers. Those of special veterinary interest deal with factors affecting the maturation of reproductive organs of the cat (M. G. Scott & P. P. Scott); genetic infertility in male hamsters (H.M. Bruce); crystallization pattern in bovine cervical mucus (G. W. Scott Blair); the fertility of natural and artificial matings in the pig (J. L. Hancock). These papers will be abstracted individually in the *Veterinary Bulletin*.—R.M.

BISHOP, M. (1958). **It's a dog's life.** pp. 224. London: Hammond, Hammond & Company. 12s. 6d. **297**

A humorous autobiography of the wife of a practising veterinary surgeon. The scene is set in Queensland, Australia.—R.M.

MALI, L. (1958). Maatalouden sanakirja. **[Agricultural dictionary.]** pp. xxvii + 477. Helsinki: Kustannusosakeyhtiö Otava. [Compiled under the auspices of the Scientific Agricultural Society of Finland.] [In Finnish, Swedish, German and English.] **298**

This excellent work bears all the hallmarks of scholarship and appears to be peculiarly free from the blemishes that so often mar multilingual dictionaries. The scope is wide, for in addition to the ordinary vocabulary the following special fields are covered, each represented by an appropriate symbol: food industry; veterinary medicine; zoology; physics, mech-

anics, electricity; geology; fishery; crop husbandry; plant diseases; botany; chemistry; machines; animal husbandry; pastures; surveying; soil science; drainage and water supplies; agricultural economics, agricultural policy, national economy; agricultural history; dairying; beekeeping; meteorology; hunting and shooting; microbiology; milling; genetics; reindeer husbandry; horticulture; buildings; peat land science; slaughter statistics; pests; labour. The general body of the text gives the words in Finnish, followed by Swedish and German (each with gender of nouns), and English (followed by U.S.A. equivalent if different). In addition there are separate indexes for Swedish, German and English (each giving the column and line for quick and easy reference); an index of scientific terms, and a table of units of measurement. Even the prefatory matter is given in each language. The paper, print and binding are all of good quality. Dr. Mali is to be congratulated on this production, the fruit of ten years' work including painstaking research and consultation with numerous experts and specialists in five countries, whose names are listed under their special fields of work.—F.E.W.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BEAUDETTE, F. R. (1958). **Progress in psittacosis research and control.** pp. xii + 271. New Brunswick, New Jersey: Rutgers University Press.

DERIVAUX, J. (1958). Physio-pathologie de la reproduction et insémination artificielle des animaux domestiques. [**Physio-pathology of reproduction and artificial insemination of domestic animals.**] pp. 467. Paris: Vigot Frères.

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ERRATA

V.B. **28**, p.290, abst. 1707. Line 2 of abst. (II). For "Strain 53 H 35", read: Strain 53 H. 38.

p. 625, abst. 3480. Line 2 of title. For "pig tuberculosis", read: guinea pig tuberculosis.

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ABBREVIATIONS OF NAMES OF PUBLICATIONS

The abbreviations used in *Index Veterinarius* and *The Veterinary Bulletin* are those of the *World List of Scientific Periodicals published in the years* 1900-1950, 3rd Edit. (1952), London : Butterworths Scientific Publications.

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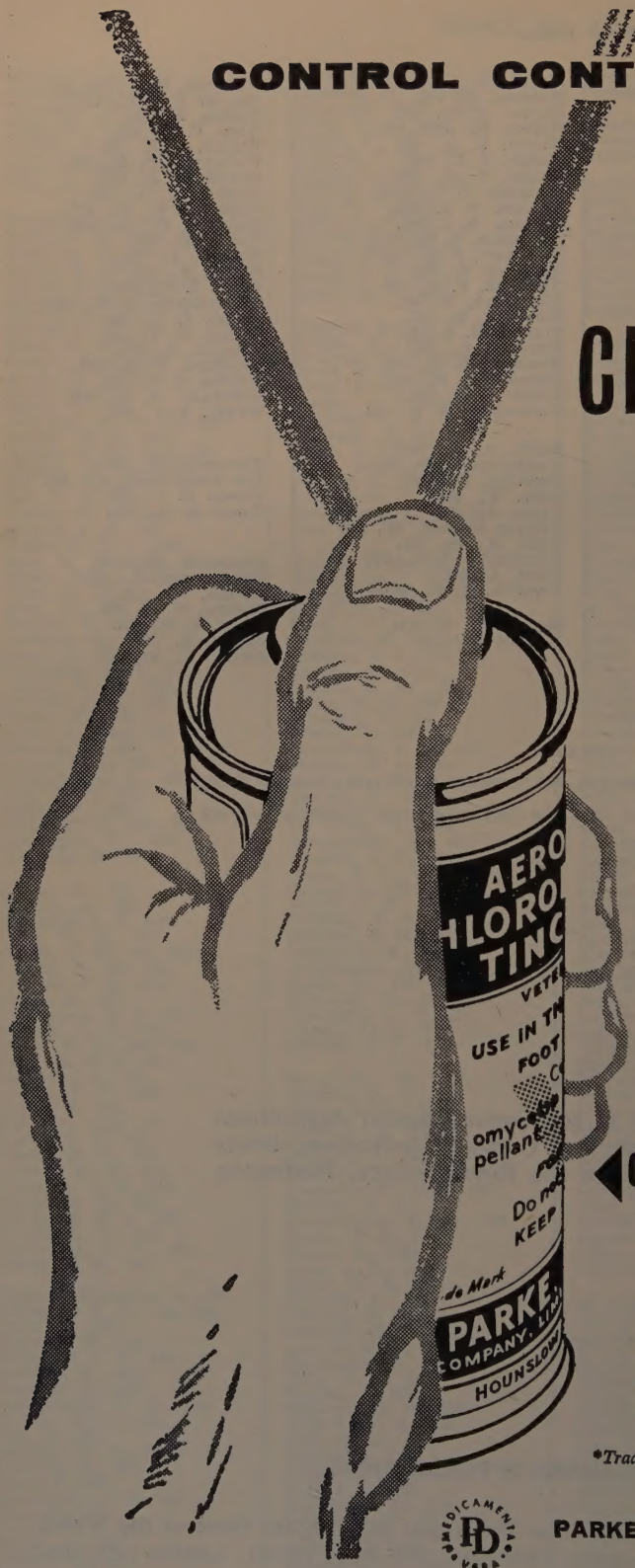

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